

C.10 - TRAFFIC AND TRANSPORTATION

Testimony of Candace M. Hill

C.10.1 SUMMARY OF CONCLUSIONS

With implementation of the recommended conditions of certification, the Genesis Solar Energy Project would be consistent with the County of Riverside General Plan Circulation Element. The project would also be consistent with all other applicable federal, state, and local laws, ordinances, regulations, and standards related to traffic and transportation. As a result, the Genesis Solar Energy Project would not have a significant adverse impact on the local and regional roadway network. With implementation of recommend conditions of certification, during the construction and operation phases, local roadway and highway demand resulting from the daily movement of workers and materials would not increase beyond significance thresholds established by the County of Riverside for local roads and the State of California for state highways.¹

C.10.2 INTRODUCTION

In the Traffic and Transportation analysis, staff focuses on (1) whether construction and operation of the Genesis Solar Energy Project (GSEP) would result in traffic and transportation impacts under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA); (2) whether the project would be in compliance with applicable laws, ordinances, regulations and standards (LORS).

The analysis identifies potential impacts related to the construction and operation of GSEP on the surrounding transportation systems and roadways. Staff proposes mitigation measures (condition of certification) where necessary.

C.10.2.1 PROJECT DESCRIPTION

The proposed GSEP is designed to utilize solar parabolic trough technology to generate electricity. The GSEP would consist of two independent solar electric generating facilities with a nominal net electrical output of 125 megawatts (MW), resulting in a total net electrical output of 250 MW.

The proposed project consists of approximately 1,800 acres located on Bureau of Land Management (BLM) acreage in eastern Riverside County. The project site is located approximately four miles north of Interstate 10 (I-10), 25 miles west of the city of Blythe and 27 miles east of the community of Desert Center.

Access to the site would be off Interstate 10 (I-10) via the Wiley's Well Road Interchange, which can be accessed by both eastbound and westbound traffic, and then north to a new six and half mile paved access road extending north and west from the

¹ The federal government (NEPA) has not established any standards for congestion, as this is a matter of local preference.

existing Wiley's Well Road. If approved, the construction of GSEP would be completed in two phases over a 37 month period. Phase 1 would consist of the Unit 1 powerblock, access road, gas, and transmission line and Phase 2 would consist of the Unit 2 powerblock.

C.10.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Significance criteria for project impacts to the surrounding traffic and transportation systems are based on three items:

1. California Environmental Quality Act (CEQA) Guidelines.
2. CEQA Environmental Checklist.
3. Performance standards and thresholds established by interested agencies.

The National Environmental Policy Act (NEPA) does not provide any standards specific to transportation.

A project may have a significant impact on traffic and transportation if it would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrians and mass transit.
2. Conflict with and applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
3. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
4. Substantially increase hazards due to a design feature or incompatible uses.
5. Result in inadequate emergency access.
6. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Level of Service

When evaluating the project-related impacts on the local transportation system, staff bases its analysis on level of service (LOS) determinations. Level of service is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of speed, travel time, and delay.

The Highway Capacity Manual 2000, published by the Transportation Research Board, Committee on Highway Capacity and Quality of Service, includes six levels of service

for roadways or intersections ranging from LOS A - the best operating conditions - to LOS F - the worst, most congested operating conditions. The County of Riverside uses the LOS criteria to assess the performance of its street and highway system and the capacity of roadway segments. The County's Circulation Element Policy C 2.1 requires "LOS C along all county maintained roads and conventional state highways."

Therefore, the LOS standards for GSEP as required by the County of Riverside and the State of California are LOS C on County roads and LOS C on State of California Interstate 10 (I-10), the main access to the project site.

A significant impact would be caused if the project causes intersection operations to exceed the accepted LOS standards on a county, state or federal roadway currently operating at LOS C or better to LOS D or worse.

C.10.4 PROPOSED PROJECT

C.10.4.1 SETTING AND EXISTING CONDITIONS

The GSEP site is located in eastern Riverside County, approximately four miles north of I-10, 25 miles west of the city of Blythe and 27 miles east of the community of Desert Center. The site is undisturbed desert land and the surrounding areas include the McCoy Mountains to the east, the Palen Mountains to the north, and Ford Dry Lake to the south of the site.

Regional vehicular access is provided by Interstate 10 (I-10) which is a four-lane, limited access, divided, east-west interstate highway. The California segment is a major traffic corridor that links the Greater Los Angeles Metropolitan Region eastward through the California desert, Arizona, and ultimately terminates at Jacksonville, Florida.

Access to the project site would be off Interstate 10 (I-10) via the Wiley's Well Road Interchange, which can be accessed by both eastbound and westbound traffic, and then north to a new six and half mile paved access road extending north and west from the existing Wiley's Well Road.

Local Highways and Roads

The following roads are located in the vicinity of the project site, Interstate 10 (I-10), United States 95 (US-95) and Wiley's Well Road:

Interstate 10 (I-10)

Interstate 10 (I-10) is a four-lane, limited access, divided, east-west interstate highway. The California segment is a major traffic corridor that links the Greater Los Angeles Metropolitan Region eastward through the California desert, Arizona, and ultimately terminates at Jacksonville, Florida. Due to the limited number of interchanges off I-10 in the vicinity, access to the project site is provided only from the Wiley's Well Road Interchange, which can be accessed by both eastbound and westbound traffic. According to the Department of Transportation (Caltrans) 2008 average annual daily traffic (AADT) counts, I-10 carries approximately 24,600 vehicles west of Wiley's Well Road and 27,000 vehicles east of Wiley's Well Road.

United States 95 (US-95)

US-95 is a two-lane north-south highway that traverses from the Canadian border in Idaho to the Mexican border near Yuma, Arizona. According to the Department of Transportation (Caltrans) 2008 average annual daily traffic (AADT) counts, US-95 carries approximately 3,500 vehicles north of I-10. In the vicinity of the GSEP site the highway lacks bicycle or pedestrian facilities.

Wiley's Well Road

Wiley's Well Road is a two-lane, arterial road accessed by eastbound and westbound traffic from the I-10 Wiley's Well Road Interchange. This road runs north of I-10 to serve the Department of Transportation (Caltrans) Wiley's Well Road Rest Area and terminates south of I-10 to the Chuckawalla Valley and Ironwood State Prisons and points south. Access to the project site will be via a new six and half mile paved road extending north and west from Wiley's Well Road. The posted speed limit is 20 mph through the Wiley's Well Road Rest Area and the road lacks bicycle or pedestrian facilities.

PUBLIC TRANSPORTATION

Public transportation consists of bus service, bicycle and pedestrian facilities, airports, and rail service. Information about these forms of public transportation follows.

Bus Service

The Palo Verde Valley Transit Agency (PVVTA) and the Sunline Transit Agency provides public transit for eastern Riverside County. The nearest transit line to the project site is the PVVTA Red Route 3 Express which provides weekday service from the city of Blythe, to the Ironwood and Chuckawalla prisons located off Wiley's Well Road south of I-10. National bus service is provided by Greyhound Lines, which has a station located in the city of Blythe, city of Palm Springs and city of Indio.

Bicycle and Pedestrian Facilities

Due to the remoteness of the area and the distance to the nearest city being the city of Blythe, no bicycle facilities such as on-street lanes and off-street paths exist in the area. As a result, bicycle activity in the vicinity is minimal-to-none.

The County of Riverside Bicycle Master Plan Update (from September 2003) identifies all planned bicycle facilities in the county. However, the GSEP site is located outside of the Master Plan's study area and no bicycle facilities are planned for the study area.

In addition, due to the remoteness of the area, pedestrian facilities, such as sidewalks and walkways, do not exist.

Airports

Two airports are located in the general vicinity of the project site, Blythe Airport is located approximately 15 miles east of GSEP and is operated by the County of Riverside.

The privately-owned, non-commercial Desert Center Airport is located five miles northeast of the community of Desert Center and approximately 13 miles west of GSEP.

Rail Service

There is no freight rail service in the project area. The Arizona and California Railroad Company (ARZC) had previously provided rail service to Riverside and San Bernardino

Counties, however, sought permission to abandon service to these counties from the Federal Surface Transportation Board (STB.)

The STB on January 13, 2010 ruled the ARZC could abandon service in Riverside and San Bernardino County. Therefore, no rail service is available for the city of Blythe, the nearest siding to the GSEP within in Riverside County, or Vidal, California located in San Bernardino County.

In addition, no regional passenger railroad serves the project area. The nearest rail passenger service is an Amtrak station in Palm Springs, California or Yuma, Arizona.

C.10.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The direct and indirect impacts of the proposed GSEP on the transportation system are discussed in this section. The assessments of transportation-related impacts are based on evaluations and technical analysis which compare the pre-Project GSEP conditions to the post-Project GSEP conditions, including the following:

1. Studied intersection and road segment locations.
2. Direct/Indirect impacts and mitigation.
3. Construction period impacts and mitigation.
4. Operations impact and mitigation.
5. Emergency services vehicle access.
6. Water, rail and air traffic.
7. Impact on glare on motorists.
8. Parking capacity.
9. Transportation of hazardous materials.
10. Law, ordinances, regulations and standards (LORS).
11. Conflict with policies, plans or programs.

Study Intersection and Road Segment Locations

The following locations on the surrounding roadway network were reviewed:

1. I-10 at Wiley's Well Road, West of the Project Site.
2. I-10 at Wiley's Well Road, East of the Project Site.
3. US-95 at Hobsonway, North of the city of Blythe.

Direct/Indirect Impacts and Mitigation

Determinations of the direct and indirect impacts are based on relevant laws, ordinances, regulations and standards (LORS) pertaining to this project. To address

direct and indirect impacts and mitigation, two major project scenarios have been evaluated: construction and operational phase.

Impacts were addressed for two separate future year scenarios: peak construction year (2012) and operational year (2012). Traffic during the decommissioning period would be expected at a level between those experienced during operation and construction and likely closer to the operational levels.

Construction Period Impacts and Mitigation

Potential traffic impacts associated with construction of the GSEP were evaluated for both construction workforce traffic and construction truck traffic.

Construction Workforce Traffic

The construction of GSEP would be completed in two phases over an approximately 37 month period beginning fourth quarter, 2010 and ending in third quarter, 2014. Phase 1 would consist of the Unit 1 powerblock, access road, gas and transmission line and Phase 2 would consist of the Unit 2 powerblock.

The construction workforce would peak during month 23 with approximately 1,093 workers per day and average approximately 652 workers during the course of construction. In addition, approximately 110 workers would be required to construct the new access road, the gas line and transmission line which would occur during peak periods. However, the construction of these facilities would not coincide with the peak of the plant site construction employment.

A worst-case scenario, where all workers commute with only one occupant per vehicle, would yield a peak trip generation of approximately 1,093 inbound trips during the morning peak period and another 1,093 outbound trips during the evening peak period.

Based on regional demographics, remoteness of the location and availability of skilled laborers, it is expected that the construction employees would be drawn from the Los Angeles Basin Region and greater Phoenix, Arizona. During construction, it is anticipated that construction workers and technical workers would reside in temporary housing during the week to be located in the city of Blythe and Parker, Arizona area.

To reach the GSEP site, construction workers would likely travel from the east and west and would primarily use I-10. It is anticipated approximately 75 percent of construction workers would travel from the east and 25 percent from the west. The workers would access the site off Interstate 10 (I-10) via the Wiley's Well Road Interchange.

Construction period parking demands are to be accommodated by a temporary on-site parking area of approximately 9 acres, which would be relocated around the project site as needed during different stages of construction. The size of the construction staging/laydown area was not described in the AFC but would be provided within the project site. In addition, a staging/laydown area would be provided at the Wiley's Well Road Rest Area for the construction of the generator tie line.

As **Traffic and Transportation Table 1** depicts, the LOS in 2012 for the three study intersections without the project would remain at LOS A. With the addition of GSEP construction traffic, LOS would change from A to B at one intersection, the I-10 interchange at Wiley's Well Road east of the project site. LOS B is an acceptable level of service on California state highways.

Traffic and Transportation Table 1
Comparison Construction Year (2012) Roadway Segment Level of Service

	<i>2012 Conditions without GSEP Construction Traffic ¹</i>			<i>2012 Conditions with GSEP Construction Traffic ²</i>		
<i>Roadway Segment</i>	<i>ADT</i>	<i>CAPACITY</i>	<i>LOS</i>	<i>ADT</i>	<i>CAPACITY</i>	<i>LOS</i>
I-10 at Wiley's Well Road, West of the Project Site	3,350	6,800	A	3,623	6,800	A
I-10 at Wiley's Well Road, East of the Project Site	3,700	6,800	A	4,520	6,800	B
US-95 at Hobsonway, North of Blythe,	450	2,000	A	655	2,000	A

1 – Year 2008 traffic volumes expanded to Year 2012 at historical rates from Year 2004 to 2008 (3.8% for Wiley's Well Road west; 6.8% Wiley's Well Road east and 8.6% for US-95)

2 – Month 23 peak construction traffic with 1,093 workers (Assumes 75% traveling from the east and 25% traveling from the west.)

This decrease in the LOS at this intersection is consistent with the proposed construction traffic patterns as it is anticipated approximately 75 percent of the traffic would utilize the eastbound Wiley's Well Road Interchange. Traffic volumes would increase from 3,700 ADT to 4,520 ADT. As a result of this increase, vehicles could become stacked as drivers exit I-10.

While traffic volumes would increase, the LOS at the study intersections and roadway segments would remain within the LOS thresholds identified by the state and local jurisdictions. All study roadway segments and intersections are expected to operate at LOS A and at LOS B at one intersection with the GSEP-related construction traffic as shown in **Traffic and Transportation Table 1**. Therefore, direct impacts on LOS from GSEP-related construction traffic would be less than significant and mitigation would not be required.

While the GSEP would not create significant direct impacts related to traffic congestion, the construction of the GSEP may overlap with two other solar projects in the immediate vicinity, the Palen Solar Power Project (PSPP) and the Blythe Solar Power Project (BSPP), and cause significant cumulative impacts. All three projects would utilize I-10 and at peak construction employ approximately 3,000 employees. The Cumulative Impacts and Mitigation section discusses these three projects and proposed mitigation (see Condition of Certification **TRANS-1**).

Construction Truck Traffic

GSEP construction is expected to generate approximately 15 to 20 one way truck trips per day peaking at approximately 50 to 75 trucks per day. The peak truck travel would not coincide with the peak month 23 construction timeframe.

In addition to the standard equipment, several pieces of equipment that exceed roadway or size limits would need to be transported to the GSEP site via I-10 during construction. This equipment includes the steam turbine generator and main transformers. The AFC indicated this equipment would have been delivered via the

Arizona and California Railroad Company at either Vidal, California or Parker, Arizona. However, as previously discussed, rail service has since been eliminated. As a result, the nearest siding to the project site would be the Parker site. The equipment would be transported using multi-axle trucks from US-95 to I-10. To transport this equipment along highway corridors, the applicant must obtain special permits from the Department of Transportation (Caltrans) to move oversized or overweight materials. The Department of Transportation, District 8, commented that GSEP would be required to obtain permits for vehicles/load exceeding limitations on size and weight.

Oversized or overweight trucks with unlicensed drivers could be hazardous to the general public and/or damage roadways. Condition of Certification **TRANS-2** requires that the project owner comply with limits on vehicle sizes and weights and driver licensing regulations. Improper transportation of hazardous materials could also prove a danger to the general public, therefore, Condition of Certification **TRANS-4** requires the owner to secure permits and licenses for the transport of hazardous materials. Finally, even properly sized and licensed trucks could damage roadways. For this reason, Condition of Certification **TRANS-5** requires that the owner restore all roads damaged by construction activities.

Operation Impacts and Mitigation

Due to the nature and remote location of the GSEP project, a relatively minor amount of traffic would be generated to and from the site during standard operations.

Operation of the facility would require a labor force of up to 66 full-time employees operating round-the-clock. In a worst-case scenario, where all workers commute with only one occupant per vehicle, would generate 132 employee commute trips spread over a 24-hour period.

In addition, GSEP will generate approximately 38 truck trips per month (average of one to two truck trips per day) for delivery of materials and supplies. Approximately 15 of these truck trips per month would be for the delivery of hazardous materials. Delivery drivers and workers would use the Wiley's Well Road offramp from either eastbound or westbound I-10 to access the site. To ensure safe handling and transportation of hazardous materials, staff proposes Condition of Certification **HAZ-3** requiring the applicant to develop and implement a Safety Management Plan for the delivery and handling of liquid and gaseous hazardous materials. Please see the **HAZARDOUS MATERIALS MANAGEMENT** section of this document

These trip additions of employees or deliveries would not cause a significant impact to the highways. It is anticipated the LOS will remain at LOS A. **Traffic and Transportation Table 2** includes information regarding the expected traffic volumes during standard operations with the base traffic volumes on the study roadway segments. The average daily traffic (ADT) volumes are expected to remain low. As indicated, the study roadway segments are expected to experience a nominal increase in GSEP-related traffic. Therefore, operations impacts from GSEP-related traffic are considered less than significant.

Traffic and Transportation Table 2
Comparison of Standard Operations (Year 2012) Traffic on Study Roadways

	2012 Standard Operations Without GSEP¹		2012 Standard Operations With GSEP²		Percent Change Associated with GSEP
Roadway Segment	ADT	CAPACITY³	ADT	CAPACITY³	
I-10 at Wiley's Well Road, West of the Project Site	3,350	6,800	3,367	6,800	0.5%
I-10 at Wiley's Well Road, East of the Project Site	3,700	6,800	3,750	6,800	1.35%
US-95 at Hobsonway, North of Blythe	450	2,000	462	2,000	2.7%

1 - Year 2008 traffic volumes expanded to Year 2012 at historical rates from Year 2004 to 2008 (3.8% for Wiley's Well Road west; 6.8% for Wiley's Well Road east and 8.6% for US-95)

2 - Project operations with 66 employees (Assumes 75% traveling from the east and 25% traveling from the west; split shifts spread over a 24 hour period.)

3 - Two-way capacity in vehicles per hour

Traffic and Transportation Table 3 includes information regarding the level of service of the study roadway segments during standard operations. As shown, the study roadway segments are expected to operate at the same condition, LOS A, as in existing conditions.

Traffic and Transportation Table 3
Standard Operations (Year 2012) Roadway Segment Level of Service Summary

Roadway Segment	Standard Operating Year 2012 Without GSEP¹		Standard Operations Year 2012 with GSEP²	
	ADT	LOS	ADT	LOS
I-10 at Wiley's Well Road, West of the Project Site	3,350	A	3,367	A
I-10 at Wiley's Well Road, East of the Project Site	3,700	A	3,750	A
US-95 at Hobsonway, North of Blythe	450	A	462	A

1 - Year 2008 traffic volumes expanded to Year 2012 at historical rates from Year 2004 to 2008 (3.8% for Wiley's Well Road west; 6.8% for Wiley's Well Road east and 8.6% for US-95)

2 - Project operations with 66 employees (Assumes 75% traveling from the east and 25% from the west; split shifts over a 24 hour period.)

Emergency Services Vehicle Access

The environmental review of emergency service vehicle access considers the off-site accessibility by emergency vehicles to the site. It is staff's opinion that the regional access to the site is adequate based on emergency vehicles can access the site directly from I-10 via the new access road that would connect with Wiley's Well Road.

On-site circulation and secondary emergency access for vehicles would be subject to site plan review by the Riverside County Fire Department per Condition of Certification **WS-6** in the **WORKER SAFETY AND FIRE PROTECTION** section of this document. Roads also will be built to County and Fire Code requirements for adequate access for emergency vehicles.

Water, Rail, and Air Traffic

The proposed GSEP is not adjacent to a navigable body of water; therefore, the GSEP would not to alter water-related transportation. In regards to rail, there are no rail tracks on or near GSEP.

The Federal Aviation Administration (FAA) requires an analysis of facilities located within 20,000 feet of an airport. No commercial airport or military airport is located within 20,000 feet of the GSEP site boundary.

Transport of Hazardous Materials

Both the construction and operation of the proposed GSEP would involve the transport of hazardous materials to the site. The transport vehicles are required to follow federal regulations governing the proper containment vessels and vehicles, including appropriate identification of the nature of the contents.

In addition to the governing federal regulations, staff has recommended Condition of Certification **TRANS-4** requiring the applicant to obtain appropriate permits from the California Highway Patrol and Department of Transportation for the delivery of hazardous materials.

In addition, Condition of Certification **HAZ-3** requires the applicant to develop and implement a Safety Management Plan for the delivery and handling of liquid and gaseous hazardous materials. Please see the **HAZARDOUS MATERIALS MANAGEMENT** section of this document.

Glare Impact on Motorists

The Visual Resources section of this document includes general information about the impacts of glare. The traffic and transportation section contains information about glare as it relates to motorists.

The GSEP power blocks and solar arrays would occupy approximately 1,360 acres of the 1,800 acres of the BLM site. A parabolic trough is a type of a solar thermal energy collector. Constructed as a long parabolic mirror, a Dewar tube runs its length at the focal point. Sunlight is reflected by the mirror and focused on the Dewar tube. The trough is usually aligned on a north-south axis and rotated to track the sun as it moves

across the sky each day. Troughs are stowed facing the ground, a position from which no glare occurs.

When a parabolic trough rotates from the stowed position to the tracking position in the morning and in the reverse in the evening they produce a linear reflected solar image which may be visible briefly to nearby observers. Within a zone of 20 meters from the plan perimeter this image may exceed an energy level deemed safe for the human eye of 4.5 kW/m². Based on the distance of the GSEP from I-10, there does not appear to be a danger of retinal damage. However, distant observers such as motorists on nearby highways may encounter "bright spots" which are generated from the bottom edge of the mirrors which are the result of a tangentially reflected image of the sun presented by spread reflection. This spot will move as the observer changes relation to the sun and appear to "follow" the observer. Since this moving spot is several orders of brightness greater than the reflected sky and clouds on the mirrors, it may be an annoying distraction. To mitigate this impact, staff has recommended Condition of Certification **VIS-4** Reduction of Glint and Glare, in the Visual Resources Section. This condition will require a chain link fence, minimum 10-feet in height, installed around the entire project perimeter and include opaque privacy slats in order to reduce brightness of spread reflection.

Parking Capacity

The project would include a temporary parking area of approximately nine acres for construction workers, based on 350 square feet per vehicle. The parking area would be relocated around the site as construction progresses. An additional area would be required for staging and laydown of equipment, materials and supplies. This staging and laydown area would also be relocated around the site as construction progresses.

This parking area would accommodate all construction workforce vehicles if workers commuted individually, however, based on workers would participate in the park-and-ride bus service or have staggered work hours (per Condition of Certification **TRANS-1**), this parking area would be oversized.

During operations, employees would park on-site in a combined administration/parking area. Figure 3.4-1 in the AFC, depicts the administration and warehouse covering approximately 39,000 square feet. Approximately 23,100 square feet would be required for the parking area, based on 350 square feet per vehicle which would accommodate approximately 66 vehicles. This would adequately accommodate the 66-employee workforce, as employees would not be on-site simultaneously as they would work different shifts to staff the GSEP 24 hours a day, 7 days a week.

With the proposed construction parking area on-site as well as on-site parking for operational employees, the project would not result in any parking spill-over to sensitive areas or create any adverse impacts.

Laws, Ordinances, Regulations, and Standards

Staff uses LORS as significance criteria to determine if the proposed GSEP project would have a significant adverse impact on the environment. The federal, state, and

local regulations that are applicable to the proposed GSEP are listed in **Traffic and Transportation Table 4.**

Traffic and Transportation Table 4
Laws, Ordinances, Regulations and Standards

Applicable LORS	Description
Federal	
Title 49 Code of Federal Regulations (CFR) Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices A-G	Addresses safety considerations for the transport of goods, materials, and substances. Governs the transportation of hazardous materials including types of materials and marking of the transportation vehicles.
State	
California Vehicle Code (VC) Sections 353; 2500-2505; 31303-31309; 32000-32053; 32100-32109; 31600-31620; California Health and Safety Code Section 25160 et seq.	Regulates the highway transport of hazardous materials.
VC Sections 13369; 15275 and 15278	Addresses the licensing of drivers and the classification of licenses required for the operation of particular types of vehicles; also requires certificates permitting operation of vehicles transporting hazardous materials.
VC Sections 35100 et seq.; 35250 et seq.; 35400 et seq.	Specifies limits for vehicle width, height, and length.
VC Section 35780	Requires permits for any load exceeding Caltrans weight, length, or width standards on public roadways.
California Streets and Highways Code Section 117, 660-672	Requires permits for any load exceeding Caltrans weight, length, or width standards on County roads.
California Streets and Highways Code Sections 117, 660-670, 1450, 1460 et seq., and 1480 et seq.	Regulates permits from Caltrans for any roadway encroachment from facilities that require construction, maintenance, or repairs on or across State highways and County roads.

Local	
Riverside County General Plan Circulation Element	Specifies long-term planning goals and procedures for transportation infrastructure system quality and specifies LOS standards used to assess the performance of a street or highway system and the capacity of a roadway.
Riverside County Municipal Code Title 10, Chapter 10.08, Sections 10.08.010-10.08.180	Specifies limits and permit requirements for oversize loads.
Riverside County Municipal Code Title 12, Chapter 12.08, Sections 12.08.010-12.08.100	Specifies requirements for encroachment permits.

Conflict with Policies, Plans, or Programs

GSEP would not conflict with any formal policies, plans, or programs related to transportation aspects of the project.

C.10.4.3 CEQA LEVEL OF SIGNIFICANCE

With implementation of conditions of certification, the impacts of the GSEP project as proposed would be less than significant for issues related to traffic and transportation.

C.10.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would essentially be Unit 1 of the proposed project, including a 125 MW solar facility located within the boundaries of the proposed project as defined by NextEra. This alternative is analyzed for two major reasons: (1) it eliminates about 50 percent of the proposed project area so all impacts are reduced, and (2) by retaining the eastern solar field, which is located on flowing desert washes, it would reduce impacts to the sand dune and playa areas and to the Mojave Fringe-toed Lizard habitat. The alternative would also reduce impacts to wildlife movement by reducing obstruction of the Palen wash and would maintain, thru both fluvial and Aeolian processes, the dune and sandy habitats. The boundaries of the Reduced Acreage Alternative are shown in **Alternatives Figure 1**.

C.10.5.1 SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates effects to the eastern 125 MW solar field and relocates the gas yard approximately 1.75 miles northwest of its present location. As a result, the

environmental setting consists of the western portion of the proposed project, as well as the area affected by the linear project components.

C.10.5.2 ASSESMENT OF IMPACTS AND DISCUSSION OF MITIGATION

The Reduced Acreage Alternative would have a similar impact on the traffic and transportation system as the proposed project. This is due to the fact that the Reduced Acreage Alternative uses similar project access and numbers of construction workers, operators, and truck deliveries. If anything, the Reduced Acreage Alternative may have fewer impacts than the proposed project because it is smaller in size.

C.10.5.3 CEQA LEVEL OF SIGNIFICANCE

Like the proposed project, impacts would be less than significant with mitigations and would not cause an unacceptable LOS.

C.10.6 DRY COOLING ALTERNATIVE

This section identifies the potential impacts of using air-cooled condenser (ACC) systems rather than the cooling towers proposed by NextEra for the Genesis project. It is assumed that the ACC systems would be located where the cooling towers are currently proposed for each of the two 125 MW power block, as illustrated in **Alternatives Figure 2** (see Section B.3).

Approximately 18 ACC fans would be required for each of the two solar fields. The 18 fans, or ACC's, would operate when the ambient temperature is above 50 degrees Fahrenheit. When the temperature is below 50 degrees Fahrenheit, only 10 of the fans would be used (GSEP 2009f). The 18 ACC fans described in the GSEP cooling study would have a length of approximately 279 feet, a width of approximately 127 feet, and a height of 98 feet (GSEP 2009f). However, based on the ACC preliminary designs for nearby solar thermal projects in similar ambient temperatures, an additional 11,690 square feet could be required for siting of the fans and the fans would be up to 120 feet in height. In addition to the ACC fans, NextEra would use a small Wet Surface Air Cooler when needed to provide auxiliary cooling during extremely hot days (GSEP 2009f). This alternative is analyzed because it would reduce the amount of water required for steam turbine cooling from 822 acre-feet per year (AFY) to 66 AFY. This reduction in water use would reduce impacts to water and biological resources.

C.10.6.1 SETTING AND EXISTING CONDITIONS OF MITIGATION

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates the use of wet-cooling towers and incorporated the use of air-cooled condensers (ACC) in the same location. As a result, the environmental setting would be the same as for the proposed project.

C.10.6.2 ASSESMENT OF IMPACTS AND DISCUSSION OF MITIGATION

With implementation of conditions of certification, no new impacts to traffic and transportation would be created with the use of ACC's in place of cooling towers. Therefore, the impacts of the GSEP project as proposed would be less than significant for issues related to traffic and transportation.

C.10.6.3 CEQA LEVEL OF SIGNIFICANCE

Like the proposed project, impacts would be less than significant with mitigations and would not cause an unacceptable LOS.

C.10.7 NO PROJECT/NO ACTION ALTERNATIVE

CEQA No Project Alternative

The No Project Alternative under CEQA defines the scenario that would exist if the proposed Genesis Solar Energy Project were not constructed. The CEQA Guidelines state that "the purpose of describing and analyzing a 'no project' alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project" (Cal. Code Regulations.. 14 § 15126.6(i)). The No Project analysis in this SA/DEIS considers existing conditions and "what would be reasonably expected to occur in the foreseeable future if the project were not approved..." (Cal. Code Regulations. 14 § 15126.6(e)(2)).

If the No Project Alternative were selected, the construction and operational impacts of the Genesis Solar Energy Project would not occur. There would be no grading of the site, no loss of resources or disturbance of desert habitat, and no installation of power generation and transmission equipment. The No Project Alternative would also eliminate contributions to cumulative impacts on a number of resources and environmental parameters in Riverside County and in the Mojave Desert as a whole.

In the absence of the Genesis Solar Energy Project, however, other power plants, both renewable and non-renewable, may have to be constructed to serve the demand for electricity and to meet RPS. The impacts of these other facilities may be similar to those of the proposed project because these technologies require large amounts of land like that required for the Genesis Solar Energy Project. The No Project/No Action Alternative may also lead to siting of other non-solar renewable technologies to help achieve the California RPS.

Additionally, if the No Project/No Action Alternative were chosen, additional gas-fired power plants may be built, or that existing gas-fired plants may operate longer. If the proposed project were not built, California would not benefit from the reduction in greenhouse gases that this facility would provide, and California utilities would not receive the 250 MW contributions to its renewable state-mandated energy portfolio.

NEPA No Action Alternatives

Under NEPA, the No Action Alternative is used as a benchmark of existing conditions by which the public and decision makers can compare the environmental effects of the

proposed action and the alternatives. Like the No Project Alternative described above, under the No Action Alternative, the impacts of the Genesis Solar Energy Project would not occur.

BLM is considering two separate actions (whether to approve a plan amendment and whether to approve the proposed project or an alternative). BLM's "action alternative" would be to amend the CDCA Plan to include Genesis Solar Energy Project (250 MW), and to approve the project as proposed. The Genesis Solar Energy Project and ancillary facilities are approved, a ROW grant is issued, and the CDCA Plan is amended to include the Genesis Solar Energy Project generation facilities and transmission line as an approved site under the Plan. Similarly, BLM could amend CDCA Plan to include one of the alternatives fully analyzed in this Draft EIS (the Reconfigured Alternative or Reduced Acreage Alternative), and approve the construction and operation of those alternatives. The alternative and ancillary facilities would be approved, a ROW grant for the appropriate acreage would be issued, and the CDCA Plan would be amended to include the alternative power generation facilities and transmission line as an approved site under the Plan.

BLM's alternatives related to the No Action Alternative and the Plan amendment are the following:

- **No Action on project but amend the CDCA plan to make the area available for future solar development.** The Genesis Solar Energy Project is not approved (project denied), and no ROW grant is issued to SES, but the CDCA plan is amended to make the project area available for large scale renewable energy development under a future project .
- **No Action on project and amend the CDCA plan to make the area unavailable for future solar development.** The Genesis Solar Energy Project is not approved (project denied), and no ROW grant is issued to SES, and the CDCA plan is amended to make the project area unavailable for large scale renewable energy development.
- **No Action on project application and on land use plan amendment.** The Genesis Solar Energy Project is not approved (denied), no ROW grant is issued, and no CDCA Plan amendment is approved. There is no consideration of information that would allow approval of a CDCA Plan amendment that would make the land available for large scale energy development in the future.

C.10.8 CUMULATIVE IMPACTS AND MITIGATION

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. *Cumulatively considerable* is interpreted to mean that the incremental effects of an individual project are significant when viewed in connection with the effects of (1) past projects; (2) other current projects; and (3) probable future projects (California Code Regulation, Title 14, Section 15130). According to the National Environmental Policy Act (NEPA), cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR §1508.7).

The potential exists for substantial future development throughout the Southern California Desert Region as well as on the Interstate 10 (I-10) corridor in eastern

Riverside County. See **Traffic and Transportation, Figure 3**, 1-10 Corridor Existing and Proposed Projects.

Energy Commission staff has limited the traffic and transportation analysis to the I-10 corridor of eastern Riverside County, the location of the proposed Blythe, Palen, and Genesis solar projects. These three projects were included in one cumulative analysis for the following reasons:

1. Access to all three projects is off I-10.
2. All three projects exist in close proximity to one another and their construction schedule would overlap. Construction schedules are projected to overlap beginning in fourth quarter 2010 through 2015. Therefore, to accurately reflect the cumulative impacts, all three projects must be considered cumulatively. Refer to **Traffic and Transportation, Figure 3** for the location of all three projects.

The analysis in this section first defines the geographic area over which cumulative impacts to traffic and transportation could occur. It then provides information about the potential for cumulative impacts to occur as a result of implementation of the Blythe, Palen, and Genesis solar projects along the I-10 corridor in addition to the applicable local and regional projects listed in **Traffic and Transportation, Figure 3**.

Geographic Extent

The Blythe Solar Power Project (BSPP), Palen Solar Power Project (PSPP), and Genesis Solar Energy Project (GSEP) are located within 45 miles of the city of Blythe on the I-10 corridor. The Bureau of Land Management has developed coordinated management plans for various areas in the California desert owned by the federal government. These three proposed solar facilities are included within the Northern and Eastern Colorado Desert Coordinated Management Plan.

For this same I-10 corridor in which Blythe, Palen, and Genesis solar facilities are proposed, approximately 20 additional energy-related projects, including solar, wind, pumped storage, and transmission lines, are being considered or expected to be considered for development by the Federal Energy Regulatory Commission (FERC); Bureau of Land Management (BLM); and the California Energy Commission. In addition, local residential and commercial development is proposed during this period. As a result, traffic could be cumulatively affected.

Cumulative impacts could occur to both the local roadway network and the regional roadway network. Cumulative impacts to the local roadway network would occur if the impacts of the three projects are combined with impacts of projects already located or to be located within the same general vicinity of the Blythe, Palen, and Genesis solar projects. Local impacts include damage to local roadways; traffic delays due to road closures; and increased congestion from project-related traffic.

Cumulative impacts could also affect the regional roadway network if impacts were to occur on I-10, the primary access to the 3 project sites. I-10 is the southernmost east–west, coast-to-coast highway in the United States, stretching from Santa Monica, California, through Phoenix and Tucson, Arizona; New Mexico, Texas, Louisiana, Mississippi, Alabama, and connecting to Interstate 95 in Jacksonville, Florida.

In California, the Santa Monica Freeway comprises the western most segment of I-10. I-10 merges with the Santa Monica Freeway and the San Bernardino Freeway and goes eastward to Riverside County. Traffic on I-10 is significantly reduced as flows through Coachella and into the Mojave Desert.

In this analysis, Energy Commission staff concentrates on the cumulative impacts on traffic and transportation along I-10 for approximately 170 miles beginning near Indio, California, and ending approximately 50 miles west of Blythe, California.²

The three projects analyzed in this section expect to employ more than one thousand workers during the construction period. For the three projects the construction workforce is expected to come from the surrounding local and regional area, including workers from the Los Angeles basin and the Phoenix, Arizona area. However, the majority of construction workers for three projects are expected to live or reside temporarily in the Indio, Blythe, or Parker, Arizona area, which is about 35 miles north of I-10. All workers would arrive at the project sites via I-10 east and I-10 west.

The regional cumulative impacts analysis of these three projects does not include currently proposed solar and wind projects located more than 45 miles east and west and 30 miles north of the Blythe Solar Power Project. This is based on the vast area over which these projects are spread and as a result, the projects would utilize different interchanges and roadways of I-10 making the impacts from projects further away unlikely. In addition, cumulative impacts from beyond this area would be tempered by: differing construction schedules; combined CEQA/NEPA requirements for mitigating significant cumulative traffic impacts; and the California Energy Commission's conditions of certification for ensuring that no significant cumulative impacts result from the Blythe, Palen and Genesis projects.

Potential Environmental Impacts

Local Impacts

Construction and operation and equipment deliveries for the Blythe, Palen, and Genesis solar projects are as follows:

Blythe

Construction of the BSPP would be completed over an approximately 69-month period, beginning in fourth quarter 2010 and ending in fourth quarter 2016. Construction work force would peak during month 16 at approximately 1,000 workers per day and average approximately 600 workers over the course of construction. Construction of the transmission line would require fewer than 25 workers during peak periods. The construction schedule will not coincide with the peak of plant site construction employment.

A worst-case scenario, where all workers commute in autos with only one occupant per vehicle, would result in approximately 1,000 inbound trips during the morning peak

² The Mojave Desert covers an area of approximately 25,000 square miles. In California, the Mojave Desert is bordered on the south by I-10; on the west by US 395. The desert's northern border is US 50, its southern border, I-15 in Nevada.

period and another 1,000 outbound trips during the evening peak hour. During Month 16, the estimated construction peak, the BSPP would generate approximately 2,000 one-way worker commute trips per day.

In addition, construction is also forecast to generate an average of approximately 15 to 20 one-way, truck trips per day with a peak of approximately 50-75 truck trips per day. The peak truck travel would be during plant site foundation construction and would not coincide with the peak on-site worker commute times during Month 16.

Palen

Palen construction activities will occur over an approximate 39-month period, beginning fourth quarter 2010 and ending in fourth quarter 2013. The number of construction workers will peak at Month 17 at approximately 1,141 per day and average approximately 566 workers over the course of construction. In addition, a transmission line extending from the project site to a new Southern California Edison substation west of the project site would require approximately 30 workers. The construction schedule of the power line is not expected to coincide with the construction of the solar facility. In addition, construction would not encroach on a public right-of-way nor coincide with peak employment.

The worst-case scenario for Palen, where all workers commute with only one occupant per vehicle, yields a peak trip generation of approximately 1,141 inbound trips during the morning peak period and another 1,141 outbound trips during the evening peak hour. Peak travel times would result in 2,282 one-way worker commute trips per day and an average of 1,132 one-way trips per day. The construction period is expected to generate an average of approximately 20 to 30 one-way, truck trips per day with a peak of approximately 40 truck trips per day.

Genesis

The 37-month construction period is expected to begin in fourth quarter 2010 and end third quarter 2014. The Project construction work force will peak during month 23 at approximately 1,093 workers per day and average approximately 652 workers over the course of construction.

Construction of the access road, transmission line, and gas line will require approximately 110 workers and would not coincide with the plant's peak construction period.

The worst-case scenario for Genesis, where all workers commute in autos with only one occupant per vehicle, yields a peak trip generation of approximately 1,093 inbound trips during the morning peak period and another 1,093 outbound trips during the evening peak hour occurring in Month 23. In addition, construction impacts will result in an average of approximately 15 to 20 one-way, truck trips per day with a peak of approximately 50 to 75 truck trips per day. Peak truck travel would occur during plant site foundation construction and would not coincide with the peak on-site worker commute time.

All Three Projects: Blythe, Palen and Genesis

In addition to using I-10 for construction traffic, each project would generate trips during operations over its own particular interchange/local intersections, as follows:

1. I-10 at Corn Springs Road, West of the Palen site
2. I-10 at Wiley's Well Road, East and West of the Genesis project site
3. I-10 at Mesa Drive, East of the Blythe project site

Since the Blythe, Palen and Genesis projects would have overlapping construction schedules, traffic impacts could potentially be exacerbated locally along I-10 and at the above intersections. Therefore, staff has proposed Condition of Certification **TRANS-1** to require coordinated traffic plans for all three projects. The Blythe and Palen projects also include this condition of certification. The traffic plans would include park-and-ride bus transportation and staggered work schedule start times to ensure acceptable loads on I-10 are maintained throughout the projects' construction periods.

Staff has also proposed Condition of Certification **TRANS-5** to ensure repair of any roadway damage caused by construction equipment and supply delivery. The Blythe and Palen projects also include this condition.

Regional Impacts during Construction

Several proposed and existing projects shown on the **Traffic and Transportation, Figure 3** have the potential to result in increased congestion on I-10. These projects include Chuckwalla Valley State Prison, Eagle Mountain Pumping Plant; commercial projects approved by the city of Blythe; Blythe Energy Project II; Blythe Airport Solar I Project; Mule Mountain Solar Project; Big Maria Vista Solar Project; Blythe PV Project; Desert Quartzite; Desert Sunlight; Mojave Solar Park/Desert Lilly Project; McCoy Soleil; Red Bluff Substation and the Chuckwalla Valley Raceway.

Although I-10 currently operates at LOS A, the high volume of traffic resulting from the overlapping construction of the Blythe, Palen and Genesis projects could result in I-10 operating at an unacceptable LOS. In addition, the LOS on I-10 could further denigrate with the identified additional projects. As a result of all these projects, cumulative impacts are significant and the BSPP, PSPP and GSEP would mitigate their contribution to this cumulative impact through the measures outlined in Condition of Certification **TRANS- 1**. This condition of certification requires applicants of the three projects examined in this analysis to coordinate construction schedules to ensure that during overlapping construction periods, parking for all workers is provided at a location that will minimize traffic on I-10 and transport workers to their respective job sites to ensure that I-10, including all intersections, operate at an acceptable LOS. Lastly, the BLM and the County of Riverside could also require similar types of mitigation to reduce the other projects contributions to the significant cumulative impacts on I-10.

Local and Regional Impacts during Operation and Decommissioning

Operation

The operation of the three solar projects analyzed in this section would not significantly contribute to long-term operational cumulative impacts related to traffic and transportation. During operation years, I-10 is expected to carry low traffic volumes and operate at LOS A. The small number of operations workers for each project would not increase the traffic volumes enough to reduce operations to below LOS A.

Decommissioning

The decommissioning of the Blythe, Palen, and Genesis solar projects, which is unlikely during the next 40 years, is not expected to result in adverse cumulative traffic and transportation impacts. These three projects are not likely to be decommissioned at the same time, and even if they were, any cumulative impacts could easily be mitigated by staggering construction employees' work schedules to ensure acceptable LOS levels. Also, construction of other solar projects is not likely to occur during the decommissioning of the Blythe, Palen, and Genesis solar projects.

Cumulative Impacts Conclusion

In this analysis, staff considered the cumulative impacts of Blythe, Palen, and Genesis, solar projects on the I-10 traffic corridor in eastern Riverside County (I-10 for approximately 170 miles beginning near Indio, California, and ending approximately 50 miles west of Blythe, California). Without mitigation, the traffic and transportation impacts of the Blythe, Palen, and Genesis solar projects have the potential to result in cumulatively considerable impacts to I-10 as well as to local streets, highways, and intersections in the vicinity of the project sites.

These cumulatively considerable impacts could also combine with impacts of past, present, or reasonably foreseeable projects to result in even greater cumulative impacts. Therefore, staff has recommended Condition of Certification **TRANS-1**, to reduce the cumulative impacts of these three projects to less than significant. However, other projects in the area are not under the scope of this analysis could result in cumulative impacts on I-10, reducing the LOS.

C.10.9 COMPLIANCE WITH LORS

The proposed GSEP is intending to comply with all federal, state, and local LORS. Development and operation of the GSEP as planned would not conflict with the LORS as described in this section. **Traffic and Transportation Table 5** summarizes the GSEP's conformance with all applicable LORS.

Traffic and Transportation Table 5
GSEP Compliance with Adopted Traffic and Transportation LORS

Applicable LORS	Description
Federal	
Title 49 Code of Federal Regulations (CFR) Subtitle B, Parts 171-173, 177-178, 350-359, 397.9 and Appendices A-G	Addresses safety considerations for the transport of goods, materials, and substances. Governs the transportation of hazardous materials including types of materials and marking of the transportation vehicles. <u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by federal enforcement agencies. Adherence is made part of the licensing process as Condition of Certification TRANS-4 .
State	
California Vehicle Code (VC) Sections 353; 2500-2505; 31303-31309; 32000-32053; 32100-32109; 31600-31620; California Health and Safety Code Section 25160 et seq.	Regulates the highway transport of hazardous materials. <u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting and/or local agency permitting. Adherence is made part of the licensing process as Condition of Certification TRANS-4 .
VC Sections 13369; 15275 and 15278	Addresses the licensing of drivers and the classification of licenses required for the operation of particular types of vehicles; also requires certificates permitting operation of vehicles transporting hazardous materials. <u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting and/or local agency permitting. Adherence is made part of the licensing process as Conditions of Certification TRANS-2 and TRANS-4 .
VC Sections 35100 et seq.; Section 35250 et seq.; and Section 35400 et seq.	Specifies limits for vehicle width, height, and length. <u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting and/or local agency permitting. Adherence is made

	part of the licensing process as Condition of Certification TRANS-2 .
VC Section 35780	<p>Requires permits for any load exceeding Caltrans weight, length, or width standards for public roadways.</p> <p><u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting and/or local agency permitting. Adherence is made part of the licensing process as Condition of Certification TRANS-2.</p>
California Streets and Highways Code Section 117, 660-672	<p>Requires permits for any load exceeding Caltrans weight, length, or width standards on County roads.</p> <p><u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting and/or local agency permitting. Adherence is made part of the licensing process as Condition of Certification TRANS-2.</p>
California Streets and Highways Code Sections 117, 660-670, 1450, 1460 et seq., and 1480 et seq.	<p>Regulates permits from Caltrans for any roadway encroachment for facilities that require construction, maintenance, or repairs on or across State highways and County roads.</p> <p><u>Consistent:</u> The GSEP will comply with these regulations. Enforcement is provided by state and local law enforcement agencies, and through ministerial state agency licensing and permitting and/or local agency permitting. Adherence is made part of the licensing process as Condition of Certification TRANS-3 and TRANS-5.</p>
Local	
Riverside County General Plan Circulation Element	<p>Specifies long-term planning goals and procedures for transportation infrastructure system quality and specifies LOS standards used to assess the performance of a street or highway system and the capacity of a roadway.</p> <p><u>Consistent:</u> The GSEP is consistent with the goals and policies of the Circulation Element. The GSEP mitigates project-related impacts through Conditions of Certification, and it incorporates transportation demand management through park-and-ride and staggered work hours. See TRANS-1</p>

	and TRANS-5 .
Riverside County Municipal Code Title 10, Chapter 10.08, Sections 10.08.010-10.08.180	Specifies limits and permit requirements for oversize loads. <u>Consistent:</u> The GSEP will comply with these regulations. Riverside County will provide enforcement and any necessary permitting. Adherence is made part of the licensing process as Condition of Certification TRANS-2 .
Riverside County Municipal Code Title 12, Chapter 12.08, Sections 12.08.010-12.08.100	Specifies permit requirements for encroachment permits. <u>Consistent:</u> The GSEP will comply with these regulations. Riverside County will provide enforcement and any necessary permitting. Adherence is made part of the licensing process as Condition of Certification TRANS-3 .

C.10.10 NOTEWORTHY PUBLIC BENEFITS

While the development of the proposed project is intended to address the requirements of federal and state mandates to develop renewable energy, it would not yield any noteworthy public benefits related to traffic and transportation.

C.10.11 PROPOSED CONDITIONS OF CERTIFICATION

It should be noted that the Bureau of Land Management (BLM) has reviewed and agreed to the following conditions of certification for the Genesis Solar Energy Project.

TRAFFIC CONTROL PLAN

- TRANS-1** Prior to start of construction of the Genesis Solar Energy Project (GSEP), the project owner shall prepare and implement a Traffic Control Plan (TCP). In preparing this TCP, the applicant shall:
1. Take into account the cumulative traffic impacts of the overlapping construction schedules of the Blythe Solar Power Project (BSPP) and the Palen Solar Power Project (PSPP).
 2. Consult with Solar Millenium, LLC to:³
 - a. Provide for a coordinated park-and-ride system of bus service for workers at all three sites to ensure that I-10 operates at LOS C or higher. The park-and-ride system shall not cause any significant impacts in the vicinity of the park-and-ride facilities.

³ Solar Mellinium LLC is the applicant for both Blythe Solar Power Project and Palen Solar Power Project.

- b. Address the movement of other vehicles and materials, including delivery routes, workforce travel routes, and the arrival and departure schedules of equipment, materials, and workers, to ensure that I-10 operates at LOC or better.

For all three projects, the TCP shall include:

- A coordinated park-and-ride program designed to transport construction workers to all three sites via a van or bus service.
- Assessment and implementation, if needed, of coordinated work hours and arrival/departure times outside of peak traffic.
- A revised traffic study designed to ensure that LOS on I-10 can be maintained by implementing measures included in the TCP. The revised traffic study shall also include information about procedures designed to ensure that the park-and-ride program does not result in significant impacts in the vicinity of the park-and-ride facilities.
- A plan for monitoring LOS during construction on I-10 and within the vicinity of the park-and-ride facilities. The applicant shall report LOS findings to the BLM's Authorized Officer and the Energy Commission's CPM and/or park-and-ride program as necessary.
- Limitation of truck deliveries to the project site.
- Redirection of construction traffic with a flag person as necessary to ensure traffic safety and minimize interruptions to non-construction related traffic flow.
- Placement signage, lighting, and traffic control devices at the project construction site and laydown areas.
- Placement of signage along eastbound and westbound Wiley's Well Road Interchange and at the entrance of each of the I-10 northbound and southbound off-ramps at Wiley's Well Road Interchange notifying drivers of construction traffic throughout the duration of the construction period.
- A heavy-haul plan to address the transport and delivery of heavy and oversized loads requiring permits from the Department of Transportation (Caltrans) or other state and federal agencies.
- Development of a work schedule and end-of-shift plan with the Chuckawalla Valley and Ironwood State Prisons.
- Timing of heavy equipment and building material delivery to the sites.
- Emergency vehicle access to the project site.
- Temporary closing of travel lanes, if necessary.
- Parking for workforce and construction vehicles.

The project owner shall consult with the County of Riverside and the Department of Transportation (Caltrans) District 8 office in the preparation and implementation of the Traffic Control Plan and shall submit in sufficient time for review and comment the proposed Traffic Control Plan to the:

1. County of Riverside and the Department of Transportation (Caltrans) District 8 office.
2. BLM's Authorized Officer and the California Energy Commission Compliance Project Manager (CPM) for review and approval. This submittal to BLM and California Energy Commission must occur prior to the proposed start of construction and implementation of the plan. BLM's Authorized Officer and the CPM shall review and approve the TCP or identify any material deficiencies within thirty (30) days of receipt.

Verification: At least 90 calendar days prior to the start of construction, including any grading or site remediation on the power plant site or its associated easements, the project owner shall submit the proposed traffic control plan to the County of Riverside and the Department of Transportation (Caltrans) District 8 office for review and comment and to BLM's authorized officer and the CPM for review and approval. The project owner shall also provide BLM's Authorized Officer and the CPM with a copy of the transmittal letter to the County of Riverside and the Department of Transportation (Caltrans) District 8 office requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from either the County of Riverside and the Department of Transportation (Caltrans) District 8 office, along with any changes to the proposed Traffic Control Plan to BLM's Authorized Officer and the CPM for review and approval.

TRANS-2 The project owner shall comply with limitations imposed by the Department of Transportation (Caltrans) District 8 office and other relevant jurisdictions including the County of Riverside on vehicle sizes and weights and driver licensing. In addition, the project owner or its contractor shall obtain necessary transportation permits from the Department of Transportation (Caltrans) and all relevant jurisdictions for use of roadways.

Verification: In the Monthly Compliance Reports (MCRs), the project owner shall report permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation on-site for Compliance Project Manager (CPM) inspection if requested.

TRANS-3 Encroachment into Public Rights-of-Way The project owner or its contractor shall comply with the Department of Transportation (Caltrans) and other relevant jurisdictions limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from the Department of Transportation (Caltrans) and all relevant jurisdictions.

Verification: In the MCR's, the project owner shall report permits received during that reporting period. In addition, for at least six months after the start of commercial operation, the project owner shall retain copies of permits and supporting documentation on-site for CPM inspection, if requested.

TRANS-4 Securing Permits/Licenses to Transport Hazardous Materials The project owner shall ensure that permits and/or licenses are secured from the California Highway Patrol and Department of Transportation (Caltrans) for the transport of hazardous materials.

Verification: In the MCR's, the project owner shall report permits and/or licenses for hazardous substance transportation received during that reporting period. In addition, the project owner shall retain copies of permits, licenses, and supporting documentation on-site for CPM inspection if requested.

TRANS-5 Restorations of All Public Roads, Easements, and Rights-of-Way The project owner shall restore all public roads, easements, and rights-of-way that have been damaged due to project-related construction activities to original or near-original condition in a timely manner, as directed by BLM's Authorized Officer and CPM. Repairs and restoration of access roads may be required at any time during the construction phase of the project to assure safe ingress and egress.

Verification: At least 30 days prior to the start of mobilization, the project owner shall photograph or videotape all affected public roads, easements, and right-of-way segments and/or intersections and shall provide BLM's Authorized Officer, the CPM, the affected local jurisdictions and the Department of Transportation (if applicable) with a copy of these images. The project owner shall rebuild, repair and maintain all public roads, easements, rights-of-way in a usable condition throughout the construction phase of the project.

Prior to the start of site mobilization, the project owner shall consult with the County of Riverside and the Department of Transportation (Caltrans) District 8 and notify them of the proposed schedule for project construction. The purpose of this notification is to request that the County of Riverside and the Department of Transportation (Caltrans) consider postponement of public right-of-way repair or improvement activities in areas affected by project construction until construction is completed and to coordinate with the project owner regarding any concurrent construction-related activities that are planned or in progress and cannot be postponed.

Within 60 calendar days after completion of construction, the project owner shall meet with BLM's Authorized Officer and the CPM, the County of Riverside and Caltrans District 8 to identify sections of public right-of-way to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide a letter signed by the County of Riverside and the Department of Transportation (Caltrans) District 8 stating their satisfaction with the repairs to BLM's Authorized Officer and the CPM.

C.10.13 CONCLUSIONS

1. The GSEP as proposed with conditions of certification would comply with all applicable LORS related to traffic and transportation. As a result, it would result in less than significant impacts to the traffic and transportation system.

2. Based on the GSEP's distance from the nearest airport, no impact on the Blythe Airport or Desert Center Airport would occur, and the project would not impact aviation safety.
3. Based on the GSEP's distance from the nearest rail and bus service, the project would not have an impact on these forms of transportation.
4. The GSEP as proposed with conditions of certification would not result in significant direct, indirect or cumulative traffic and transportation impacts, and therefore, no environmental justice issues.
5. Staff is proposing Condition of Certification **TRANS-1**, which requires the owner to develop and implement a Traffic Control Plan. The Traffic Control Plan would include a plan for reducing peak construction workforce vehicle trips.
6. Staff is proposing Condition of Certification **TRANS- 2**, limitation of vehicle size and weights to ensure compliance with limitations on use on roadways.
7. Staff is proposing Condition of Certification **TRANS- 3** requiring compliance with limitations on encroachment into public rights-of-ways.
8. Staff is proposing Condition of Certification **TRANS- 4** to ensure safe transport of hazardous materials.
9. Staff is proposing Condition of Certification **TRANS-5** to ensure all public roads, easements and rights-of-ways are restored to their original condition if damaged by project related construction.

C.10.14 REFERENCES

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[http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert .pdf](http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CA_Desert.pdf)

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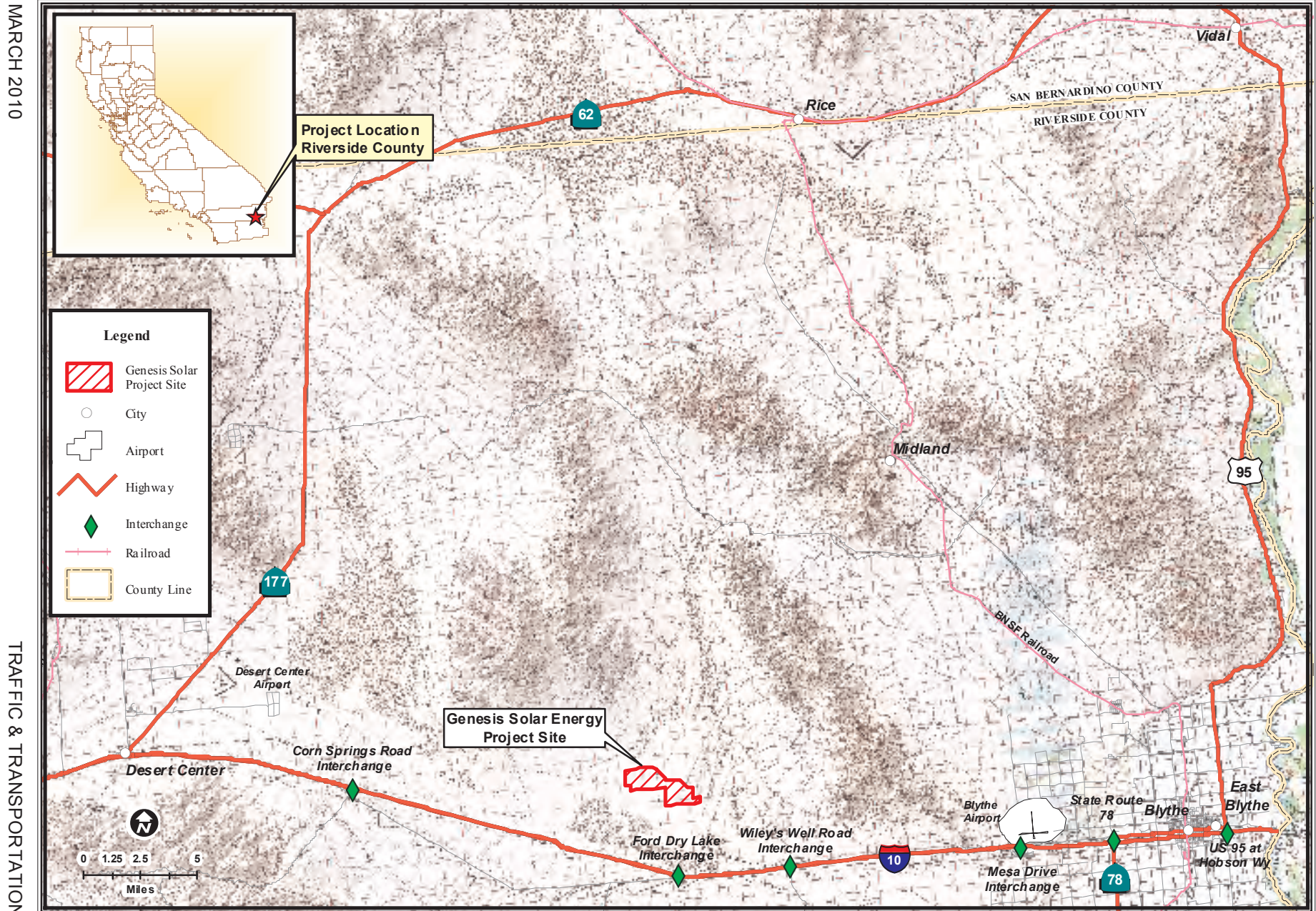
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TRAFFIC AND TRANSPORTATION - FIGURE 1 Genesis Solar Energy Project - Regional Transportation Network



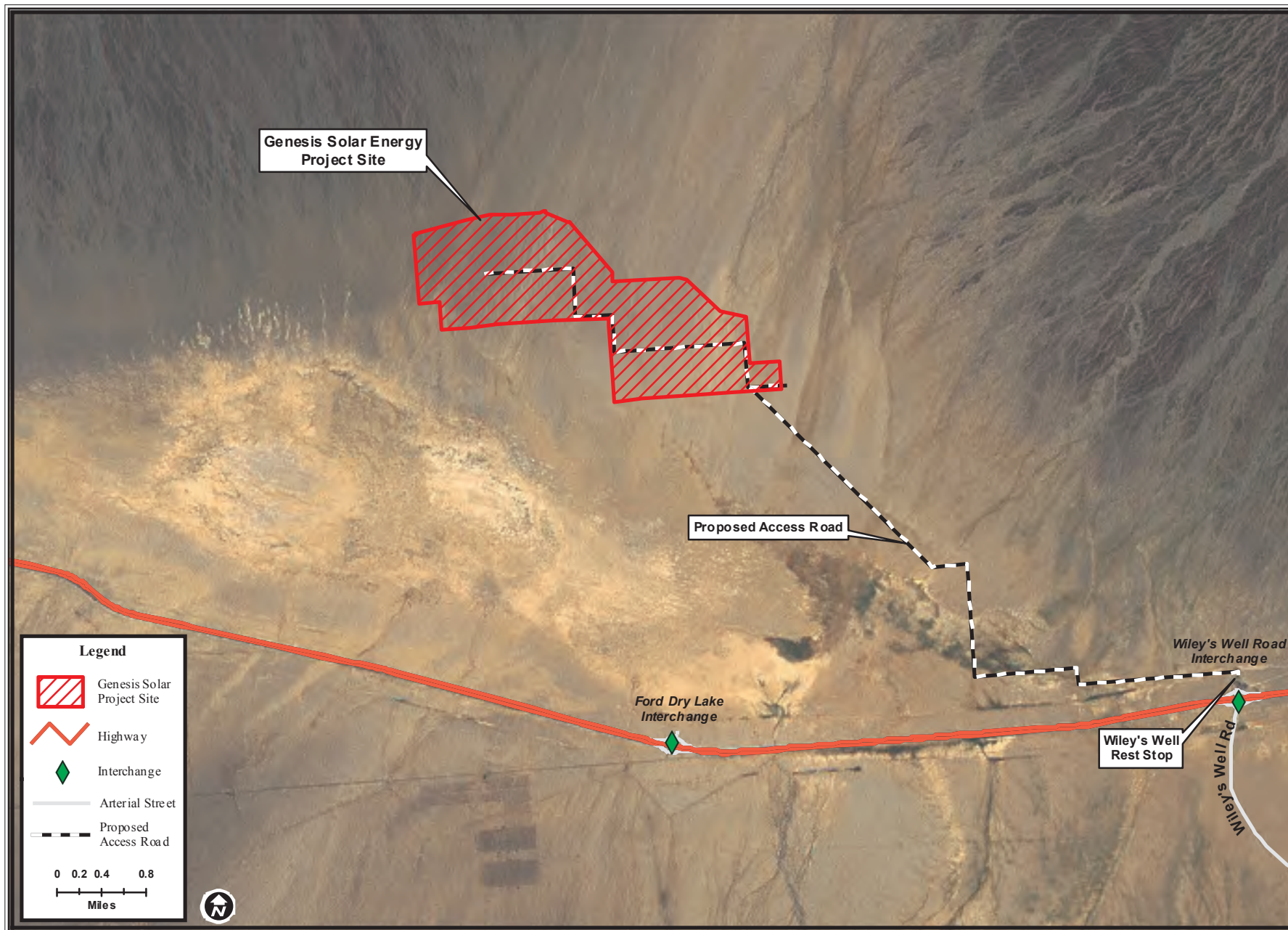
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SOURCE: California Energy Commission Statewide Power Plant Maps 2010 - Tele Atlas

TRAFFIC AND TRANSPORTATION - FIGURE 2 Genesis Solar Energy Project - Local Transportation Network

MARCH 2010

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CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

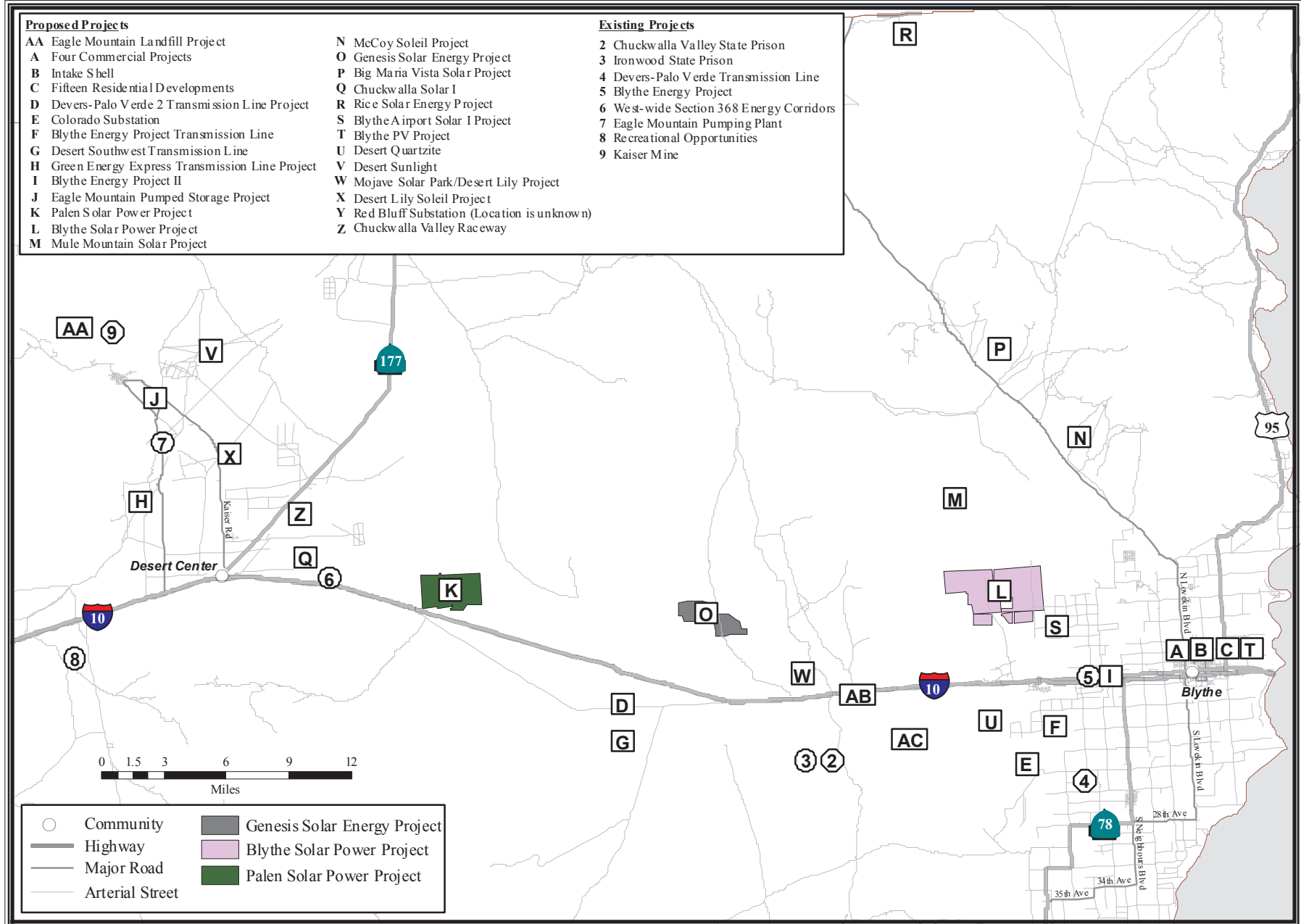
SOURCE: California Energy Commission Statewide Power Plant Maps 2010 - Tele Atlas

TRAFFIC & TRANSPORTATION - FIGURE 3

I-10 Corridor Existing and Proposed Projects

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SOURCE: California Energy Commission, Bureau of Land Management

C.11 - TRANSMISSION LINE SAFETY AND NUISANCE

Testimony of Obed Odoemelam, Ph.D.

C.11.1 SUMMARY OF CONCLUSIONS

The applicant, Genesis Solar, LLC proposes to transmit the power from the proposed Genesis Solar Energy Project (GSEP) to the Southern California Edison's (SCE's) transmission grid through SCE's proposed Colorado River Substation at a location approximately 6.5 miles east of the site. The project's tie-in line would be a single-circuit 230-kilovolt (kV) transmission line routed in a southerly right-of-way eventually connecting to the proposed SCE Colorado River Substation. This proposed substation would be under the jurisdiction of the California Public Utilities Commission (PUC) and the Bureau of Land management (BLM), therefore, this staff analysis is for the tie-in project line as it stretches from the proposed on-site substation to the proposed SCE substation. Since the proposed line would be located in the SCE service area, it would be constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards (LORS). The proposed route would traverse undisturbed desert land with no nearby residents, thereby eliminating the potential for residential electric and magnetic field exposures when the line is operating. With the four proposed conditions of certification, any safety and nuisance impacts from energizing the proposed tie-in line would be less than significant.

C.11.2 INTRODUCTION

The purpose of this staff assessment is to assess the proposed Genesis Solar Energy Project's (GSEP's) transmission line's design and operational plan to determine whether its related field and nonfield impacts would constitute a significant environmental hazard in the areas around the proposed route as it runs between the site and the Southern California Edison's (SCE's) planned Colorado River Substation 6.5 miles to the east. GSEP would consist of two generating units (Units 1 and Unit 2), each of 125 megawatts (MW) for a total of 250 megawatts. The generated power would be transmitted using an overhead single-circuit 230-kilovolt (kV) line. The SCE substation would be built by SCE under the jurisdiction of the California Public utilities Commission (PUC) and the Bureau of Land Management (BLM). Therefore, this staff analysis is for the proposed GSEP tie-in line and the related on-site 230-kV switchyard and not the proposed Colorado River Substation. Since the proposed line would be built and operated within the SCE service area, it would be designed, built, and operated according to SCE's guidelines. The potential impacts of concern in this analysis are those to be encountered along the proposed route. All related health and safety laws, ordinances, regulations, and standards (LORS) are currently aimed at minimizing such impacts along any given corridor. Staff's analysis in this regard focuses on the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

- aviation safety;
- interference with radio-frequency communication;

- audible noise;
- fire hazards;
- hazardous shocks;
- nuisance shocks; and
- electric and magnetic field (EMF) exposure.

Section C.11.3 shows the federal, state, and local laws and policies that apply to the control of the field and nonfield impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements.

C.11.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The potential magnitude of the line impacts of concern in this staff analysis depends on compliance with the listed design-related LORS and industry practices. These LORS and practices have been established to maintain impacts below levels of potential significance. Thus, if staff determines that the project would comply with applicable LORS, we would conclude that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below together with the potential for compliance with the LORS that apply.

Laws, Ordinances, Regulations, and Standards

**TRANSMISSION LINE SAFETY AND NUISANCE (TLSN) TABLE 1
Laws, Ordinances, Regulations, and Standards (LORS)**

Applicable LORS	Description
Aviation Safety	
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR), "Objects Affecting the Navigable Air Space"	Describes the criteria used to determine the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1G, "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space"	Addresses the need to file the "Notice of Proposed Construction or Alteration" form (Form 7640) with the FAA in cases of potential for an obstruction hazard.
FAA Advisory Circular 70/460-1G, "Obstruction Marking and Lighting"	Describes the FAA standards for marking and lighting objects that may pose a navigation hazard as established using the criteria in Title 14, Part 77 of the CFR.
Interference with Radio Frequency Communication	
Federal	
Title 47, CFR, section 15.2524, Federal Communications Commission (FCC)	Prohibits operation of devices that can interfere with radio-frequency communication.

Applicable LORS	Description
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52)	Governs the construction and operation of power and communications lines to prevent or mitigate interference.
Audible Noise	
Local	
Riverside County General Plan, Noise Element	Establishes policies and programs to ensure that noise levels are appropriate to land uses.
Riverside County Noise Ordinance	Establishes performance standards for planned residential or other noise-sensitive land uses.
Hazardous and Nuisance Shocks	
State	
CPUC GO-95, "Rules for Overhead Electric Line Construction"	Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.
Title 8, California Code of Regulations (CCR) section 2700 et seq. "High Voltage Safety Orders"	Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.
National Electrical Safety Code	Specifies grounding procedures to limit nuisance shocks. Also specifies minimum conductor ground clearances.
Industry Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Specifies the guidelines for grounding-related practices within the right-of-way and substations.
Electric and Magnetic Fields	
State	
GO-131-D, CPUC "Rules for Planning and Construction of Electric Generation Line and Substation Facilities in California"	Specifies application and noticing requirements for new line construction including EMF reduction.
CPUC Decision 93-11-013	Specifies CPUC requirements for reducing power frequency electric and magnetic fields.
Industry Standards	
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines	Specifies standard procedures for measuring electric and magnetic fields from an operating electric line.
Fire Hazards	
State	
14 CCR sections 1250-1258, "Fire Prevention Standards for Electric Utilities"	Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

C.11.4 PROPOSED PROJECT

C.11.4.1 SETTING AND EXISTING CONDITIONS

As discussed by the applicant, Genesis Solar LLC, the two units of the proposed Genesis Solar Energy Project would occupy approximately 1,800 acres of federal land currently managed by the Bureau of Land Management (BLM). An additional 90 acres would be required for the right-of-way of the project's transmission line. The applicant proposes to obtain a total of 4,600 acres to constitute the total right-of-way for the project and all related facilities. The site is desert land located in east Riverside County approximately 25 miles west of Blythe and 27 miles east of Desert Center (GSEP 2009a pp.3-1 and 3-25). As more fully discussed by the applicant, each of the two proposed units would have its own solar field with the generated power transmitted to the SCE power grid from a common switchyard using a single-circuit overhead, 230 -kV line. The point of connection with the SCE grid would be SCE's planned 500/230-kV Colorado River Substation approximately 6.5 miles east of the site. Since the planned SCE Colorado Substation would be under the jurisdiction of the CPUC, it would be designed, built, and operated to reflect implementation of related CPUC requirements.

The proposed project site is in an uninhabited open desert land with no existing structures. The proposed line's right-of-way would traverse BLM-administered land in a largely uninhabited desert land where there is no residential area within 15 miles (GSEP 2009 p. 4-4). The general absence of residences in the area around the proposed GSEP and related transmission line means that there would not be the type of residential field exposure that has been of health concern in recent years.

PROJECT DESCRIPTION

The proposed GSEP 230-kV tie-in line would consist of the following individual segments:

- A new, single-circuit 230-kV overhead transmission line extending the 6.5 miles from the on-site project switchyard to the planned SCE Colorado River Substation to the east;
- The project's on-site 230-kV switchyard from which the conductors would extend to the planned Colorado River Substation; and
- Project-related upgrades at the Colorado River Substation.

The line would exit the facility in a southeast direction to a point where it would cross the existing Imperial County District's Blythe to Eagle Mountain 161-KV transmission line and then I-10. From the I-10 crossing, the line would further extend east and share transmission poles with the Blythe Energy Project Transmission Line (still under construction directly south of the project). From there the line would extend eastwards to ultimately terminate at the interconnection point within the planned Colorado River Substation (GSEP 2009a, p 3-25 through 3-37).

The proposed line conductors would be aluminum steel-reinforced cables supported on steel mono-pole structures placed approximately 880 feet apart and with heights of from 70 feet to a maximum of 145 feet as typical of similar SCE lines). The applicant

provided the details of the proposed support structures as related to line safety, maintainability, and field reduction efficiency (GSEP 2009a, Figures 3.6-2, 3-26, and 4.2-1).

C.11.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

DIRECT IMPACTS AND MITIGATION METHODS

Aviation Safety

Any potential hazard to area aircraft would relate to the potential for collision in the navigable airspace. The requirements listed on **TLSN Table 1** establish the standards for assessing the potential for obstruction hazards within the navigable space and establish the criteria for determining when to notify the FAA about such hazards. These regulations require FAA notification in cases of structures over 200 feet from the ground. Notification is also required if the structure is to be below 200 feet in height but would be located within the restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area extending 20,000 feet from the runway. For airports with runways of 3,200 feet or less, the restricted airspace would be an area that extends 10,000 feet from this runway. For heliports, the restricted space is an area that extends 5,000 feet.

The nearest airport to the project and related line is the Blythe Airport approximately 15 miles east of the project and 10 miles east of the proposed tie-in line meaning that the airport would be too far away for the project to pose a collision hazard to area aviation according to FAA criteria. Furthermore, the line support structures would, at less than 145 feet would be significantly less than the 200 feet in height that triggers the FAA concern over collision hazards. Therefore, staff does not recommend any related condition of certification.

Interference with Radio-Frequency Communication

Transmission line-related radio-frequency interference is one of the indirect effects of line operation and is produced by the physical interactions of line electric fields. Such interference is due to the radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge*, but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication. Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts is therefore minimized by reducing the line electric fields and locating the line away from inhabited areas.

The proposed project line would be built and maintained in keeping with standard SCE practices that minimize surface irregularities and discontinuities and related corona noise. Such corona effects would further be minimized by the specific low-corona designs proposed by the applicants. Since the line would traverse an uninhabited open space, staff does not expect any corona-related radio-frequency interference or related complaints and does not recommend any related condition of certification.

Audible Noise

The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. As with radio noise, such noise is limited instead through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts on line safety, efficiency, maintainability, and reliability. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line electric field, the potential for perception could be assessed from estimates of the field strengths expected during operation. Such noise is usually generated during rainfall, mainly from overhead lines of 345 kV or higher such as the proposed line. Research by the Electric Power Research Institute (EPRI 1982) has validated the efficacy of available mitigation measures by showing that the fair-weather audible noise from all modern transmission lines even of more than 345 kV would be generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. Since the proposed low-corona design is also aimed against surface electric fields, staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed line and related facilities, please refer to staff's analysis in the **Noise and Vibration** section.

Fire Hazards

The fire hazards addressed through the related LORS in **TLSN Table 1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between the line and nearby trees and other combustible objects.

Standard fire prevention and suppression measures for similar SCE lines would be implemented for the proposed project line (GSEP 2009a, p. 4-7). The applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Condition of Certification **TLSN-3** is recommended to ensure compliance with important aspects of the fire prevention measures.

Hazardous Shocks

Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological harm or death and remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

The applicant's stated intention to implement the GO-95-related measures against direct contact with the energized line (GSEP 2009a, pp. 3-25 and 4-7) would serve to minimize the risk of hazardous shocks. Staff's recommended Condition of Certification **TLSN-1** would be adequate to ensure implementation of the necessary mitigation measures.

Nuisance Shocks

Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electric and magnetic fields.

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). For the proposed project line, the project owner will be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way.

The potential for nuisance shocks around the proposed line would be minimized through standard industry grounding practices (GSEP 2009a, p.4-7). Staff recommends Condition of Certification **TLSN-4** to ensure such grounding for BSPP.

Electric and Magnetic Field Exposure

The possibility of deleterious health effects from EMF exposure has increased public concern in recent years about living near high-voltage lines. Both electric and magnetic fields occur together whenever electricity flows, and exposure to them together is generally referred to as *EMF exposure*. The available evidence as evaluated by the CPUC, other regulatory agencies, and staff has not established that such fields pose a significant health hazard to exposed humans. There are no health-based federal regulations or industry codes specifying environmental limits on the strengths of fields from power lines. Most regulatory agencies believe, as staff does, that health-based limits are inappropriate at this time. They also believe that the present knowledge of the issue does not justify any retrofit of existing lines.

Staff considers it important, as does the CPUC, to note that while such a hazard has not been established from the available evidence, the same evidence does not serve as proof of a definite lack of a hazard. Staff therefore considers it appropriate, in light of present uncertainty, to recommend feasible reduction of such fields without affecting safety, efficiency, reliability, and maintainability.

While there is considerable uncertainty about EMF health effects, the following facts have been established from the available information and have been used to establish existing policies:

- Any exposure-related health risk to the exposed individual will likely be small.
- The most biologically significant types of exposures have not been established.
- Most health concerns are about the magnetic field.
- There are measures that can be employed for field reduction, but they can affect line safety, reliability, efficiency, and maintainability, depending on the type and extent of such measures.

State's Approach to Regulating Field Exposures

In California, the CPUC (which regulates the installation and operation of many high-voltage lines owned and operated by investor-owned utilities) has determined that only no-cost or low-cost measures are presently justified in any effort to reduce power line fields beyond levels existing before the present health concern arose. The CPUC has further determined that such reduction should be made only in connection with new or modified lines. It requires each utility within its jurisdiction to establish EMF-reducing measures and incorporate such measures into the designs for all new or upgraded power lines and related facilities within their respective service areas. The CPUC further established specific limits on the resources to be used in each case for field reduction. Such limitations were intended by the CPUC to apply to the cost of any redesign to reduce field strength or relocation to reduce exposure. Publicly owned utilities, which are not within the jurisdiction of the CPUC, voluntarily comply with these CPUC requirements. This CPUC policy resulted from assessments made to implement CPUC Decision 93-11-013.

In keeping with this CPUC policy, staff requires a showing that each proposed overhead line would be designed according to the EMF-reducing design guidelines applicable to the utility service area involved. These field-reducing measures can impact line operation if applied without appropriate regard for environmental and other local factors bearing on safety, reliability, efficiency, and maintainability. Therefore, it is up to each applicant to ensure that such measures are applied in ways that prevent significant impacts on line operation and safety. The extent of such applications would be reflected by ground-level field strengths as measured during operation. When estimated or measured for lines of similar voltage and current-carrying capacity, such field strength values can be used by staff and other regulatory agencies to assess the effectiveness of the applied reduction measures. These field strengths can be estimated for any given design using established procedures. Estimates are specified for a height of one meter above the ground, in units of kilovolts per meter (kV/m), for the electric field, and milligauss (mG) for the companion magnetic field. Their magnitude depends on line voltage (in the case of electric fields), the geometry of the support structures, degree of cancellation from nearby conductors, distance between conductors, and, in the case of magnetic fields, amount of current in the line.

Since the CPUC currently requires that most new and upgraded lines in California be designed according to the EMF-reducing guidelines of the electric utility in the service

area involved, their fields are required under this CPUC policy to be similar to fields from similar lines in that service area. Designing the proposed project line according to existing SCE field strength-reducing guidelines would constitute compliance with the CPUC requirements for line field management.

The CPUC has recently revisited the EMF management issue to assess the need for policy changes to reflect the available information on possible health impacts. The findings did not point to a need for significant changes to existing field management policies. Since there are no residences in the immediate vicinity of the proposed project line, there would not be the long-term residential EMF exposures mostly responsible for the health concern of recent years. The only project-related EMF exposures of potential significance would be the short-term exposures of plant workers, regulatory inspectors, maintenance personnel, visitors, or individuals in the vicinity of the line. These types of exposures are short term and well understood as not significantly related to the health concern.

Industry's and Applicant's Approach to Reducing Field Exposures

The present focus is on the magnetic field because unlike electric fields, it can penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of the health concern of recent years. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case. As one focuses on the strong magnetic fields from the more visible high-voltage power lines, staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields while using some common household appliances than from high-voltage lines (National Institute of Environmental Health Services and the U.S. Department of Energy, 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short term, while the exposures from power lines are lower level, but long term. Scientists have not established which of these types of exposures would be more biologically meaningful in the individual. Staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with similar SCE lines, specific field strength-reducing measures would be incorporated into the proposed line's design to ensure the field strength minimization currently required by the CPUC in light of the concern over EMF exposure and health.

The field reduction measures to be applied include the following:

1. increasing the distance between the conductors and the ground to an optimal level;
2. reducing the spacing between the conductors to an optimal level;
3. minimizing the current in the line; and
4. arranging current flow to maximize the cancellation effects from interacting of conductor fields.

Since the route of the proposed project line would have no nearby residences, the long-term residential field exposures at the root of the health concern of recent years would not be a significant concern for the line. The field strengths of most significance in this regard would be as encountered at the edge of the line's 100-foot right-of-way. These field intensities would reflect the effectiveness of the applied field-reducing measures.

The applicant (GSEP 2009a, p. 4-6 and Figures 4.22 through 5.25) calculated the maximum electric and magnetic field intensities expected for the edge of the 100-foot right-of-way. Staff has verified the accuracy of the modeling approach used in the applicant's calculations with regard to parameters bearing on field strength dissipation and exposure assessment. The maximum electric field intensity at this location was calculated as 0.7 kV/m which reflects the effectiveness of the applied field-reducing design. The corresponding magnetic field value was calculated as 32 mG. These field strengths are as staff would expect for an SCE line of the same voltage and current-carrying capacity and reflect effective implementation of related SCE's field reduction measures. The corresponding magnetic field intensity was calculated as 143 mG at the edge of this right-of-way and is also similar to that of SCE lines of similar voltage rating and current-carrying capacity as required under current CPUC regulation. The requirements in Condition of Certification **TLSN-2** for field strength measurements are intended to validate the applicant's assumed reduction efficiency.

CLOSURE AND DECOMMISSIONING IMPACTS AND MITIGATION

If the proposed GSEP were to be closed, decommissioned and all related structures are removed as described in the **Project Description** section, the minimal area aviation risk and electric shocks and fire hazards from the physical presence of this tie-in line would be eliminated. Decommissioning and removal would also eliminate the line's field impacts assessed in this analysis in terms of nuisance shocks, radio-frequency impacts, audible noise, and electric and magnetic field exposure. Since the line would be designed and operated according existing SCE guidelines, these impacts would be as expected for SCE lines of the same voltage and current-carrying capacity and therefore, at levels reflecting compliance with existing health and safety LORS.

C.11.5 REDUCED ACREAGE ALTERNATIVE

The reduced acreage alternative would essentially be Unit 1 of the proposed project which would be a 125 MW solar facility located within the boundaries of the proposed project. This alternative is analyzed for two main reasons: First it would eliminate about 50 percent of the proposed project area so all impacts would be reduced proportionately and second, it would retain the eastern solar field, which is located on flowing desert washes. It would also reduce impacts on the sand dune and playa areas and the Mojave Fringe-toed Lizard habitat. The alternative would also reduce impacts on wildlife movement by reducing obstruction of the Palen Wash and would maintain the dune and sandy habitats through both fluvial and Aolian processes. The boundaries of the Reduced Acreage Alternative are shown in **Figure 1** in the **Alternatives** section.

For this Reduced Acreage Alternative, the generated power would still be transmitted to the SCE power grid through the Colorado River Substation and would require

infrastructure similar to that for the proposed version, including a water supply pipeline, transmission line. No downstream line upgrades would likely be necessary.

C.11.5.1 SETTING AND EXISTING CONDITIONS

This alternative would be located entirely within the boundaries of the proposed project. Its use would simply eliminate the projects impacts on the eastern 125 MW solar field and cause relocation of the gas yard approximately 1.75 miles northwest of its present location. As a result, the environmental setting would consist of the western portion of the proposed project as well as the area potentially affected by the linear facilities.

C.11.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis focuses on the transmission line required to serve the generation facility, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

aviation safety;

interference with radio-frequency communication;

audible noise;

fire hazards;

hazardous shocks;

nuisance shocks; and

electric and magnetic field (EMF) exposure.

The transmission line for the Reduced Acreage alternative would follow the same route as that for the proposed project. The line would (a) be constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards and (b) would traverse undisturbed desert land with no nearby residents, thereby eliminating the potential for residential noise electric and magnetic field exposures.

C.11.5.3 CEQA LEVEL OF SIGNIFICANCE

With the four conditions of certification recommended for the proposed project, any safety and nuisance impacts from the line for the Reduced Acreage Alternative would be less than significant.

C.11.6 DRY COOLING ALTERNATIVE

The project is proposed to use a wet cooling tower for plant cooling and would utilize groundwater from wells at the site for this purpose. The Dry Cooling Alternative would preclude the use of such cooling water as cooling would be achieved without water.

C.11.6.1 SETTING AND EXISTING CONDITIONS

The setting for the Dry Cooling Alternative would be the same as described for the project and associated linear facilities as described in Subsection C.8.4.1 above. The

only substantive change would be the substitution of a dry cooling facility for the proposed cooling tower to produce the same amount of power.

C.11.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Staff's analysis focuses on the transmission line required to serve the generation facility, and addresses the following issues taking into account both the physical presence of the line and the physical interactions of its electric and magnetic fields:

aviation safety;

interference with radio-frequency communication;

audible noise;

fire hazards;

hazardous shocks;

nuisance shocks; and

electric and magnetic field (EMF) exposure.

Since the same amount of power would be generated as with the proposed project, the same transmission infrastructure would be used for this Dry Cooling Alternative. The line would also (a) be constructed, operated, and maintained according to SCE's guidelines for line safety and field management which conform to applicable laws, ordinances, regulations and standards and (b) would traverse undisturbed desert land with no nearby residents, thereby eliminating the potential for residential noise and electric and magnetic field exposures.

C.11.6.3 CEQA LEVEL OF SIGNIFICANCE

With the four conditions of certification recommended for the proposed project, any safety and nuisance impacts from the line for the proposed Western Lands #2 Alternative would be less than significant.

C.11.7 NO ACTION ALTERNATIVE

With the No Project/No Action Alternative, the proposed action would not be undertaken. Unless BLM implements an amendment to the CDCA Plan, the BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality [43 U.S.C. 1781 (b)] in conformance with applicable statutes, regulations, policy and land use plan.

C.11.7.1 SETTING AND EXISTING CONDITIONS

The setting for the No Project/No Action Alternative would include lands in which the proposed project and its associated linear facilities would be located. Subsection C.8.4.1 (above) describes in detail the lands that would be affected.

C.11.7.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

In the No Project / No Action Alternative, the proposed action would not be undertaken. The BLM land on which the project is proposed would continue to be managed within BLM's framework of a program of multiple use and sustained yield, and the maintenance of environmental quality [43 U.S.C. 1781 (b)] in conformance with applicable statutes, regulations, policy and land use plan. For example, there are seven large solar projects proposed on BLM land within the area served by the BLM El Centro Field Office, and there are currently 70 applications for solar projects covering 611,692 acres pending with BLM in the California Desert District.

Under the No Project/No Action alternative, the transmission line safety and nuisance impacts of the proposed GSEP would not occur at the proposed site. This would help reduce the total human exposure to area field and non-field impacts from electric power lines in general.

C.11.7.3 CEQA LEVEL OF SIGNIFICANCE

Under the No Project/No Action alternative, the transmission line safety and nuisance impacts from the proposed project line would not occur thereby contributing to the general effort to reduce these impacts on humans. However, given the potentially low levels of these line impacts, such contribution to exposure reduction would be less than significant.

C.11.8 CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact where its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (California Code Regulation, Title 14, section 15130). NEPA states that cumulative effects can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR §1508.7).

When field intensities are measured or calculated for a specific location, they reflect the interactive, and therefore, cumulative effects of fields from all contributing conductors. This interaction could be additive or subtractive depending on prevailing conditions. Since the proposed project's transmission line would be designed, built, and operated according to applicable field-reducing SCE guidelines (as currently required by the CPUC for effective field management), any contribution to cumulative area exposures should be at levels expected for SCE lines of similar voltage and current-carrying capacity. It is this similarity in intensity that constitutes compliance with current CPUC requirements on EMF management. The actual field strengths and contribution levels for the proposed line design would be assessed from the results of the field strength measurements specified in Condition of Certification **TLSN-2**.

C.11.9 COMPLIANCE WITH LORS

As previously noted, current CPUC policy on safe EMF management requires that any high-voltage line within a given area be designed to incorporate the field strength-reducing guidelines of the main area utility lines to be interconnected. The utility in this case is SCE. Since the proposed project 230-kV line and related switchyard would be designed according to the respective requirements of the LORS listed in **TLSN Table 1**, and operated and maintained according to current SCE guidelines on line safety and field strength management, staff considers the proposed design and operational plan to be in compliance with the health and safety requirements of concern in this analysis. The actual contribution to the area's field exposure levels would be assessed from results of the field strength measurements required in Condition of Certification **TLSN-2**.

C.11.10 NOTEWORTHY PUBLIC BENEFITS

Since the proposed BSPP tie-in line would pose specific, ant risks of the field and nonfield effects of concern in this analysis, its building and operation would not yield any public benefits regarding the effort to minimize any human risks from these impacts.

C.11.11 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

TLSN-1 The project owner shall construct the proposed transmission line according to the requirements of California Public Utility Commission's GO-95, GO-52, GO-131-D, Title 8, and Group 2. High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and Southern California Edison's EMF reduction guidelines.

Verification: At least 30 days before starting the transmission line or related structures and facilities, the project owner shall submit to the Compliance Project Manager (CPM) a letter signed by a California registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall use a qualified individual to measure the strengths of the electric and magnetic fields from the line at the points of maximum intensity along the route for which the applicant provided specific estimates. The measurements shall be made before and after energization according to the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) standard procedures. These measurements shall be completed no later than 6 months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energization measurements with the CPM within 60 days after completion of the measurements.

TLSN-3 The project owner shall ensure that the rights-of-way of the proposed transmission line are kept free of combustible material, as required under the provisions of section 4292 of the Public Resources Code and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first 5 years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the right-of-way and provide such summaries in the Annual Compliance Report.

TLN-4 The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

C.11.12 CONCLUSIONS

Since staff does not expect the proposed 230-kV transmission line to pose a significant aviation hazard according to current FAA criteria, we do not consider it necessary to recommend location changes on the basis of a potential hazard to area aviation.

The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current SCE guidelines (reflecting standard industry practices). These field-reducing measures would maintain the generated fields within levels not associated with radio-frequency interference or audible noise.

The potential for hazardous shocks would be minimized through compliance with the height and clearance requirements of CPUC's General Order 95. Compliance with Title 14, California Code of Regulations, section 1250, would minimize fire hazards while the use of low-corona line design, together with appropriate corona-minimizing construction practices, would minimize the potential for corona noise and its related interference with radio-frequency communication in the area around the route.

Since electric or magnetic field health effects have neither been established nor ruled out for the proposed GSEP and similar transmission lines, the public health significance of any related field exposures cannot be characterized with certainty. The only conclusion to be reached with certainty is that the proposed line's design and operational plan would be adequate to ensure that the generated electric and magnetic fields are managed to an extent the CPUC considers appropriate in light of the available health effects information. The long-term, mostly residential magnetic exposure of health concern in recent years would be insignificant for the proposed line given the absence of residences along the proposed route. On-site worker or public exposure would be short term and at levels expected for SCE lines of similar design and current-carrying capacity. Such exposure is well understood and has not been established as posing a significant human health hazard.

Since the proposed project line would be operated to minimize the health, safety, and nuisance impacts of concern to staff and would be routed through an area with no nearby residences, staff considers the proposed design, maintenance, and construction plan as complying with the applicable LORS. With implementation of the four recommended conditions of certification, any such impacts would be less than significant.

C.11.13 REFERENCES

EPRI — Electric Power Research Institute, 1982. Transmission Line Reference Book: 345 kV and Above.

Genesis Solar Energy Project, 2009a, (tn:53083). Application for certification of the Genesis Solar Energy Project, Volumes I and II. Submitted to the California Energy Commission on August 31, 2009.

National Institute of Environmental Health Services. 1998. *An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*. A Working Group Report, August 1998.

C.12 - VISUAL RESOURCES

Testimony of William Kanemoto, James Jewell, and William Walters

C.12.1 SUMMARY OF CONCLUSIONS

Bureau of Land Management and Energy Commission staff (hereafter jointly referred to as staff) have analyzed visual resource-related information pertaining to the proposed Genesis Solar Project and conclude that the proposed project, with all staff-recommended conditions of certification, would have adverse, but less-than-significant visual impacts.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have less-than-significant visual impacts. However, the degree and extent of those impacts would be substantially less than those of the Proposed Project.

Impacts of the Dry Cooling Alternative, with staff-recommended conditions of certification, would be substantially similar to the Proposed Project and would also have less-than-significant visual impacts. The Dry Cooling Alternative could be somewhat superior to the Proposed Project due to a lower incidence of visible vapor plumes.

However, the anticipated visual impacts of the Proposed Project, Reduced Acreage, and Dry Cooling Alternatives, in combination with past and foreseeable future local projects in the Chuckwalla Valley, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively significant and unavoidable.

All action alternatives studied, with staff-recommended conditions of certification, would conform with all applicable Laws, Ordinances, Regulations and Standards (LORS).

C.12.2 INTRODUCTION

The following analysis evaluates potential visual impacts of the Genesis Solar Project; its consistency with applicable Laws, Ordinances, Regulations and Standards (LORS); and conformance with applicable guidelines of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

In order to provide a consistent framework for the analysis, a standard visual assessment methodology developed by California Energy Commission staff and applied to numerous siting cases in the past was employed in this study. A description of this methodology is provided in **Appendix VR-1**. The analysis was also based upon a visual resource inventory and Interim Visual Resource Management Class mapping of the area prepared for the Devers-Palo Verde No. 2 Transmission Line EIR/EIS, and is consistent with that inventory.

As noted above, the project is evaluated for conformance with applicable LORS. Adopted expressions of local public policy pertaining to visual resources are also given great weight in determining levels of viewer concern. In accordance with staff's

procedure, conditions of certification are proposed as needed to reduce potentially significant impacts to less than significant levels, and to ensure LORS conformance, if feasible.

C.12.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Federal

The National Environmental Policy Act (NEPA) requires that the federal government use ‘all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S. Code 4331[b][2]).’

Significance under NEPA is defined in terms of a) context and b) intensity. Context means that the significance of an action must be analyzed in several contexts, such as society, the affected region, affected interests, and locale. Intensity refers to the severity of impact, and includes a variety of factors to be considered (40 CFR 1508.27).

Some of the intensity factors cited in 40 CFR 1508.27 that are potentially relevant to visual impacts include ‘unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands . . . ,’ degree of controversy, degree of uncertainty about possible effects, degree to which an action may establish a precedent for future actions, and potential for cumulatively significant impacts.

In this study, staff utilized visual resource inventory and Interim Visual Resource Management Class assignments conducted for BLM for the Devers-Palo Verde 2 Transmission Line EIR/EIS, as a part of the environmental baseline for this analysis, as described in greater detail in Section C.12.4.1, below (CPUC/USDOJ, 2006). The analysis of this staff assessment does not apply the BLM Visual Resource Management (VRM) system. In staff’s professional opinion, however, despite differences in application and process, the fundamental visual assessment principles used in the BLM and CEC methodologies are consistent with one another, and BLM has consequently agreed to assess the visual effects of the project using the CEC method. Staff thus considers that the conclusions of this analysis are substantially equivalent to those that would be reached by applying BLM-specific methods of visual assessment, although the large-scale land management orientation of the VRM system differs in application from the CEQA-oriented CEC approach in some ways.

State

The CEQA *Guidelines* define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance.” (Cal. Code Regs., tit.14, § 15382.) Appendix G of the *Guidelines*, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

- a. Would the project have a substantial adverse effect on a scenic vista?

- b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- c. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- d. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

In addition, staff evaluates potential impacts in relation to standard criteria described in detail in Appendix VR-1. Staff evaluates both the existing visible physical environmental setting, and the anticipated visual change introduced by the proposed project to the view, from representative, fixed vantage points (called “Key Observation Points” (KOPs). KOPs are selected to be representative of the most characteristic and most critical viewing groups and locations from which the project would be seen. The likelihood of a visual impact exceeding Criterion C. of the CEQA Guidelines, above, is determined in this study by two fundamental factors: the susceptibility of the setting to impact as a result of its existing characteristics (reflected in its current level of visual quality, the potential visibility of the project, and the sensitivity to scenic values of its viewers); and the degree of visual change anticipated as a result of the project. These two factors are summarized respectively as *visual sensitivity* (of the setting and viewers), and *visual change* (due to the project) in the discussions below. Briefly, KOPs with high sensitivity (due to outstanding scenic quality, high levels of viewer concern, etc.), that experience high levels of visual change from a project, are more likely to experience adverse impacts.

Under the Energy Commission criteria, as under all professionally accepted visual assessment methods, visibility of a project per se does not constitute a threshold for significant visual impact, regardless of the sensitivity of viewers, except under unusual circumstances in which applicable legal restrictions apply. For example, within a national park or BLM Wilderness Area, very low levels of visibility of a project may be considered the appropriate significant visual impact threshold. However, this threshold would apply only to actions within the park or wilderness boundaries.

Local

Staff also reviews local LORS and their policies or guidelines for aesthetics or preservation and protection of sensitive visual resources that may be applicable to the project site and surrounding area. These LORS include local government land use planning documents where applicable.

Please refer to **Appendix VR-1** for a complete description of staff's visual resources evaluation criteria.

C.12.4 PROPOSED PROJECT

C.12.4.1 SETTING AND EXISTING CONDITIONS

Regional Landscape

The Project is located within the Mojave Desert, a sub-region of the Sonoran Desert. The Mojave is bordered to the south (at I-10) by the hotter Colorado Desert (also a sub-region of the Sonoran Desert) and to the north (near the Sierra Nevada Mountains) by the colder Basin and Range Desert.

The Mojave Desert is a landscape typical of the basin and range physiographic province of which it is part, with small, rocky mountain ranges with jagged peaks alternating with talus slopes and desert floor. Flat basins form broad flat expanses of barren plains typified by low scrub vegetation and expansive views. Dark browns and garnets are the dominant mountain hues, although blues and purples prevail as viewing distance increases. In contrast, lighter brown and tan soils dominate the desert floor, sparsely dotted with the grey-green of Sonoran creosote bush and golden bursage scrub vegetation. Although Joshua Tree National Park is located to the west of the project vicinity, there are no Joshua Trees in the project viewshed. However, desert Ironwood (*Olnaya tesota*), a tree species unique to portions of the Sonoran Desert known for its occasional colorful pink bloom, are evident in the project area, and outstanding concentrations of Ironwood forest are located among washes north of the project site (ASDM 2010).

The Project site is located in the center of the Chuckwalla Valley, a northwest-southeast trending valley, roughly 40 miles long and 5 to 10 miles wide. Valley elevations range from 350 feet at Ford Dry Lake just south of the Project site to about 800 feet. The small surrounding mountain ranges rise 3,000 to 5,000 feet above mean sea level (amsl): McCoy Mountains to the east, Palen Mountains to the north, Mule Mountains to the southeast, Little Chuckwalla Mountains to the south, and Chuckwalla Mountains to the southwest. Like the Mojave desert in general, the Chuckwalla Valley is a highly visible landscape, affording wide, panoramic views of long duration and depth. Flat desert plains combine with sparse vegetation to allow distant views of mountain ranges that form a backdrop.

There are no residences within 15 miles of the Project site. The nearest communities are Lake Tamarisk and Desert Center, over 20 miles to the west, and Blythe, over 20 miles to the east. None of these communities have views of the Project site due to distance and topography.

The BLM manages several congressionally designated wilderness areas near the project site: the Palen/McCoy Wilderness Area abuts the northern site boundary; the Little Chuckwalla Wilderness Area is six to twelve miles to the southeast; and the Chuckwalla Wilderness Area is about five miles to the southwest. Other special designation areas in the area include several Areas of Critical Environmental Concern (ACECs). The Palen Dry Lake ACEC lies roughly 5 miles to the west. The Desert Lily Sanctuary ACEC is located off of Route 177 northeast of Desert Center. The eastern boundary of Joshua Trees National Monument is also located just west of Route 177.

Use of Ford Dry Lake directly south of the project site is limited to travel on designated routes; there are no camping facilities and no off-road travel allowed. There is an undeveloped camping area at the end of Corn Springs Road adjacent to the Chuckwalla Wilderness, approximately 18 miles southwest of the Project. There are no facilities or designated trails within the Palen-McCoy Wilderness, although hiking access is possible via old, closed jeep trails.

There is limited existing development in the vicinity of the site: I-10, roughly two miles south of the Project site, is the dominant man-made feature. Other developments include Chuckwalla Valley State Prison and Ironwood State Prison, 2-1/2 miles south of I-10 off of Wiley's Well Road. Both are roughly nine miles southeast of the Project and are visible but visually very subordinate from I-10. Approximately one to three miles to the south of I-10, there are Western Area Power Administration (WAPA) and Southern California Edison (SCE) transmission lines and substations within BLM's Utility Corridor K (GSEP 2009a). The Devers-Palo Verde transmission line runs east to west roughly one to 3 miles south of the highway but remains largely visually subordinate from the highway within most of the Chuckwalla Valley. Despite these man-made features the natural setting predominates and the existing landscape of the Chuckwalla Valley appears relatively intact, dominated by vast expanses of dry lake and scrub-covered valley floor, and vivid mountains behind them.

Project Site

VISUAL RESOURCES Figure 1, View of the Project Site, depicts a panoramic view of the Genesis project site and vicinity looking northward from the Ford Dry Lake Road interchange on I-10. The site is located behind the lighter-colored dry lakebed in the foreground, and below the sloping alluvial fans at the foot of the mountains. The Palen Mountains appear to the left of the photograph, the McCoy Mountains appear to the right.

The 1,800 acre project site consists of two separate solar fields that span roughly 3.2 miles of the northeastern Chuckwalla Valley. The site is flat undeveloped desert abutting alluvial fans from the Palen and McCoy Mountains. The Project site is relatively flat, sloping north to south from roughly 360 to 390 feet with an overall existing slope of approximately 0.5%. The Project transmission line would also traverse flat undeveloped land before connecting to the Blythe Energy Project Transmission Line (BEPT) currently under construction in the BLM Utility Corridor K, two miles south of I-10.

The Project site and transmission line corridor are located on Federal lands administered by the BLM for Multiple Use Class (MUC) M (Moderate Use) which allows for uses such as mining, livestock, grazing, recreation, utilities and energy development, provided desert resources are conserved and impacts from such uses are mitigated. The Project transmission line would connect with the Blythe Energy Transmission Line that is under construction within the BLM's Utility Corridor K.

Project Visual Setting: Viewshed, Landscape Units, and KOPs

Project Viewshed

As illustrated in **VISUAL RESOURCES Figure 2**, which includes a computer-generated GIS viewshed map, the project would be visible to virtually all of the area within a 5-mile radius, and potentially visible to much of the area within a ten-mile radius, though mediated by distance. A characteristic feature of this desert landscape is the potential for large projects to be seen over great distances where even slightly elevated viewpoints exist, due to the large open areas of level topography and absence of intervening landscape features. Nearly all of the viewshed visible to the north of the project site lies within the Palen-McCoy Wilderness Area, which borders the site immediately to the north. However, the flatness of the project site and the level elevation relationships between the project, I-10, and low-lying viewpoints within the wilderness area, result in very oblique vertical viewing angles that reduce the prominence of the site from these viewpoints. Only from elevated viewpoints would viewers be exposed to large expanses of the site. As indicated in the viewshed mapping, however, only a very small portion of these elevated viewpoints lie within a 5-mile middle-ground radius of the project, reducing its potential visual magnitude and dominance due to distance.

Landscape Units and KOPs: Visual Quality, Viewer Concern, and Viewer Exposure

VISUAL RESOURCES Figure 2, Existing Landscape Setting, Project Viewshed, and Key Observation Points (KOPs), subdivides the project viewshed into broad landscape units delineating areas of broadly consistent scenic quality, viewer sensitivity, and distance zone (from viewers) as previously adopted by BLM. It also depicts Key Observation Points (KOPs) used as the basis for this analysis. KOPs are used in the Energy Commission visual analysis method as the basis for evaluating potential project impacts, and represent the key sensitive viewer groups and viewing locations likely to be affected by the project. This use of KOPs is analogous to their use in the VRM method, in which KOPs are used from which to conduct contrast ratings for impact evaluation. **VISUAL RESOURCES Figure 3**, Visual Setting Character Photos, depicts various typical image types and features within the project viewshed.

In the CEC assessment approach, KOPs are rated according to the visual quality of their setting, and an assessment of their level of viewer concern and viewer exposure. Those three primary attributes are summarized in a KOP's *overall visual sensitivity* rating, which reflects an assessment of the overall susceptibility to visual impact of the viewer group/receptors it represents. These sensitivity ratings serve as the environmental baseline against which potential project impacts, measured in terms of level of *visual change*, are evaluated. Because viewer concern and exposure may vary among different receptors within a landscape unit, overall sensitivity of particular KOPs within a unit may also vary.

The baseline mapping of landscape units in this assessment, as depicted in **VISUAL RESOURCES Figure 2**, is derived from the visual resource inventory and subsequent Interim Visual Resource Management (IVRM) Classes assigned with the involvement of BLM in the Devers-Palo Verde No. 2 Transmission Line EIR/EIS (CPUC/BLM, 2006). In the baseline setting for that document, landscape units were delineated, assessed and

rated following the BLM's Visual Resource Management (VRM) system, as documented in the visual resources analysis of that document. Following the VRM methodology, the inventory mapping and evaluation reflect an assessment of the landscape's *scenic quality*, *viewer sensitivity*, and *distance zone* of observers. While the application of the two agency methods differ in various ways, these categories are generally analogous to the three primary components of overall visual sensitivity - visual quality, viewer concern, and viewer exposure - in the Energy Commission staff method.

In general, VRM inventories within the California Desert Conservation Area (CDCA) have historically regarded the entire CDCA as having a high viewer sensitivity level, in accord with the primary goals of the CDCA Plan, which include recognition and protection of the area's unique scenic value (USDOI 1980)(CDCA Plan). In field observations at the site, staff found no inconsistencies between the delineation and evaluation of the project visual baseline in the Devers-Palo Verde study and a baseline or visual setting evaluation following the typical CEC visual assessment methods.

In the following analysis, as in other recent CEC/BLM joint visual analyses, conclusions of CEQA significance reference the IVRM Class mapping solely with respect to their field delineation of landscape units and the scenic quality ratings that underlie them. That is, for purposes of CEQA, VRM mapping is used in reference to the underlying visual resource *inventory* values. In the specific case of the Devers-Palo Verde No. 2 EIR/EIS, the Visual Resource Inventory (VRI) and Interim Visual Resource Management (IVRM) Class mapping were equivalent.

KOPs used in this study include those used in the project AFC, which were selected for the AFC in consultation with BLM staff. Additional KOPs were added by staff for this analysis. For simplicity the numbering of viewpoints in the AFC have been retained in this analysis. (All figures referred to in the text may be found at the end of this section).

In the following discussion, distance zone terminology does not refer to the BLM VRM usage, but rather is used, in the context of the Energy Commission method, as follows: 'foreground' is used generically to refer to viewing distances under ½-mile; 'middle-ground' to distances between ½ and 5 miles; 'near middle-ground' refers to that portion of middle-ground under roughly one mile; and 'background' to distances over 5 miles.

Because KOP photos represent the existing views of project simulations, the reader is referred below to these 'before project' photos in the discussion that follows. The figure numbers referring to each KOP below thus appear out of sequence, but may be found along with all other figures, at the end of this section.

KOP 1 - Ford Dry Lake Bridge Over I-10 (VRI Class III)

KOP 1 represents potential viewers of the Project from I-10 at Ford Dry Lake, as well as motorists on I-10 in general. The location is representative of the highway segment at the nearest viewing distance to the project site. KOP 1 is located on the I-10 bridge over the Ford Dry Lake Exit, directly south of the proposed eastern solar field, approximately 3 miles from the nearest site boundary. Ford Dry Lake was used as an OHV recreational area in the past, but OHV use is no longer permitted in the area. The view from the bridge is to the north and represents a middle-ground viewing distance.

VISUAL RESOURCES Figure 8a depicts the existing view from KOP 1. The bridge is slightly elevated above the desert floor, providing greater visual exposure to the site than the adjoining freeway. Expansive, panoramic views of Ford Dry Lake and Chuckwalla Valley in the foreground and middle-ground, and the Palen and McCoy Mountains in the near background, are highly intact and undisturbed.

Looking northward toward the project site, the landscape foreground and near-middle-ground is characterized by the flat plain of Ford Dry Lake, atypically light-colored due to a relative absence of the darker Creosote scrub vegetation cover of the region within the dry lake bed. Behind the lakebed, the distinctly darker color of scrub vegetation cover is evident, particularly on the sloping bajadas or alluvial fans descending gently from the foot of the mountains behind the site. The lakebed and bajadas are back-dropped by dark, jagged, un-vegetated ridges of the Palen and McCoy Mountains. The horizontal, homogenous form of the desert plain contrasts against the vertical irregularity of the mountain ranges that enclose it. Light soils and sparse, low-lying vegetation of the foreground lakebed contrast with dark garnets and purples of the mountains, which dominate the scene at distances close enough to reveal detail in form and texture.

Visual Quality: Overall visual quality of the lakebed and bajada landscape in which both the project site and KOP are located is considered moderate. The landscape character of the lowlands themselves is common to this region and lacking in vivid elements, but are strongly influenced and defined by the adjacent scenery of the Palen and McCoy Mountains. Visual quality of the Palen Mountains in the background is moderately high due to their vivid, highly intact character, dramatic jagged vertical form and line, and prominent, defining presence within the overall view. The McCoy Mountains to the northeast were not inventoried or mapped by BLM, but have a similar defining and vivid character in views toward the project site, and are likewise considered moderately high in visual quality.

Viewer Concern: Viewer concern is considered high due to the high number of travelers on I-10 that would be provided middle-ground views of the project from this location and vicinity. According to Caltrans Year 2008 Average Annual Daily Traffic (AADT) volumes, I-10 averages approximately 24,600 vehicles west of Wiley's Well Road (GSEP 2009a). As mentioned above, BLM considers all areas within the CDCA to have high viewer sensitivity by virtue of the special status of the area and the primary importance of scenic resources in the plan area's goals.

Viewer Exposure: Viewer exposure to the site is moderate. Although there is nothing obstructing views of the site, in general the very flat site terrain and very level viewing relationship between viewers on I-10 and the site result in a very oblique viewing angle. This viewing angle would be even more oblique from highway level than from this view from the elevated overcrossing. Consequently, despite the vast area of the proposed site and its vast horizontal extent, this factor in combination with distance reduces the site to a very narrow horizontal portion of the view, dominated by the dry lake foreground, and more vivid and prominent mountains and bajadas behind it. Viewer numbers on I-10 are high.

Overall visual sensitivity, reflecting the combined ratings of visual quality, viewer concern, and viewer exposure, above, is considered to be moderately high. (Please refer to Section C.12.3, above for description of sensitivity ratings.)

KOP 2 -Wiley's Well Bridge Over I-10 (VRI Class III)

VISUAL RESOURCES Figure 9a depicts the existing view from KOP 2. KOP 2 represents potential viewers of the project site from near the Wiley's Well Rest Area and interchange, as well as I-10 motorists as they approach the site from background distance. This heavily used I-10 rest area is approximately 17 miles west of Blythe. Viewing distance to the project site is roughly 5 miles or background distance. The location on the bridge provides a more elevated view than views from the rest stop itself, which are largely blocked by nearby foreground topography, or from the highway itself. The bridge is elevated above the desert floor providing a panoramic view of Chuckwalla Valley in the foreground and middleground, and Palen Mountains in the background.

The depicted in the photograph, the foreground landscape is characterized by a flat light-colored desert plain with a more typical, if sparse, creosote scrub land-cover than at Ford Dry Lake. In views northwest toward the project site, the Palen Mountains form a vivid backdrop of dark, jagged slopes and ridges at a distance of approximately 10 to 15 miles. The horizontal, homogenous form of the desert plain contrasts against the vertical irregularity of the mountain ranges enclose it. Light soils and sparse, low-lying vegetation contrast against dark garnets and purples of distant mountains.

Visual Quality: Overall visual quality of the flat plain landscape in which both the project site and KOP are located is considered moderate since the landscape character, even more than that of Ford Lake, is typical of the region and lacking in vivid elements. At this distance the sloping alluvial bajadas at the foot of the mountains are less distinct and prominent than from nearer viewpoints. Visual quality of the Palen Mountains in the background however, is moderately high due to their vivid, highly intact character, dramatic jagged vertical form and line, and prominent, defining presence within the overall view. The visual foreground seen from the rest area has a moderately high level of intactness and unity. Small, wooden H-frame poles can be seen in the foreground, but remain visually subordinate due to their small scale and dark color.

Viewer Concern: Viewer concern of this KOP is considered high due to the relatively high number of users of the Wiley's Well Rest Area, and of I-10 in the project area in general. As discussed above, BLM considers all areas within the CDCA to have high viewer sensitivity by virtue of the special status of the area and the primary importance of scenic resources in the plan area's goals.

Viewer Exposure: Viewer exposure is moderate. In general the very flat site terrain and very level viewing relationship between viewers on I-10 and the site result in a very oblique viewing angle. Thus, despite the vast area of the proposed site and its vast horizontal extent, this factor in combination with distance reduces the site to a very narrow horizontal portion of the view, dominated by the scrub foreground, and more vivid and prominent mountains and bajadas behind it. However, in the vicinity of KOP 2 at Wiley's Well Road, the most prominent project feature would be the project

transmission line. Exposure to this feature would be open and unobscured at foreground and middle-ground distances, though foreground exposure would be of relatively short duration. Viewer numbers on I-10 and at the rest area are high.

Overall visual sensitivity is considered to be moderately high.

KOP 3 - Corn Springs BLM Road

VISUAL RESOURCES Figure 10a depicts the existing view from KOP 3. KOP 3 represents the view from BLM Corn Springs Road, connecting to the Corn Springs Campground and trailhead within the Chuckwalla Mountains Wilderness Area (WA) at a distance of roughly 14 miles from the nearest project features. The Corn Springs Campground is located roughly 17.5 miles from the nearest project feature, at an elevation of approximately 1600 feet. This KOP was selected by BLM staff as representative of an actively used recreational destination within the project viewshed. However, at this far background distance, project visibility would be limited, despite the elevated viewing position in relation to the project. As a designated wilderness, the Chuckwalla Mountains WA were assigned an IVRM Class I or special designation status. However, the area is located within a surrounding context assigned IVRM Class II.

Visual Quality: Visual quality of the landscape within which the KOP is located, the Chuckwalla Mountains WA, is considered moderately high. The area is highly intact and characterized by panoramic, elevated views over vast areas of the Chuckwalla Valley desert floor to the distant Palen and McCoy Mountains. As described previously, visual quality of the project site is moderate, and the adjoining Palen and McCoy Mountains are considered moderately high.

Viewer Concern: Viewer concern of visitors to the Chuckwalla WA are considered high. As discussed above, BLM considers all areas of the CDCA to have high viewer sensitivity, but this would be even more so within the WA, where the panoramic views and scenic values generally would be particularly high.

Viewer Exposure: Viewer exposure to the project is moderately low. While viewer numbers would not be high in this location, they are relatively high because the presence of a designated campsite and trailhead and their accessibility via Corn Springs Road makes it much more accessible than most of the wilderness areas in the project viewshed. While the elevation of the photograph in **VISUAL RESOURCES Figure 10a** is not known, the Corn Springs campsite and trailhead are located at roughly elevation 1,600 feet, far above the valley floor. These viewpoints (on Corn Springs Road and vicinity) are thus among the few that are readily accessible and offer elevated, panoramic views overlooking the entirety of the proposed project site. Even from this high elevation, however, the great distance (14 to 17+ miles) to the project features places the viewpoints in the far background distance zone. At this distance, the project would appear evident but would not be highly prominent.

Overall visual sensitivity from this viewpoint is considered to be moderately high.

KOP 4a, 4b – Palen/McCoy Mountains Elevated Viewpoints

Staff was unable to visit viewpoints representing elevated locations within the Palen or McCoy Mountains, and the AFC analysis does not address these viewpoints. Points within the WA are considered potentially sensitive, however. **VISUAL RESOURCES Figure 11a**, is a virtual view created with Google Earth to simulate views toward the project site from the nearest ridges of the Palen Mountains at a distance of roughly 3.75 miles to the nearest boundary of the project site, and elevation of approximately 1,475 feet. **VISUAL RESOURCES Figure 11b** is a similar virtual view from a high ridge near McCoy Springs in the McCoy Mountains at a distance of roughly 6.6 miles and elevation of approximately 2,250 feet. As described previously, the project site directly abuts the southern boundary of the Palen-McCoy WA. Most of these wilderness lands adjoining the project site comprise valley floor or sloping bajadas (alluvial fans) to background distance (5 miles). However, as indicated in the viewshed mapping in **VISUAL RESOURCES Figure 2**, a small portion of the Palen Mountain ridges falls within the middle-ground distance zone (under 5 miles). KOP 4a represents a ridge top within that small middle-ground area of exposure, located roughly 2.5 miles from the nearest (closed) jeep trail. (Motorized travel is not allowed on this trail segment.)

As also indicated in the viewshed mapping, a considerable portion of the south-facing slopes of the Palen Mountains, and most of the west-facing slopes of the McCoy Mountains, would have views of the site in the background distance zone (beyond 5 miles). KOP4b represents such a background distance view, from a ridge top in the McCoy Mountains a short distance from McCoy Springs and an existing jeep trail. Staff was unable to visit these KOPs in the field. In order to evaluate potential project effects on views to these elevated portions of the WA, staff created these virtual KOPs using Google Earth. Though less desirable than an actual field photo, these views at least provide an understanding of site visibility and exposure from these locations based on accurate topographic and project data.

Visual Quality: Visual quality of KOPs within the Palen and McCoy Mountains is considered to be moderately high. The rocky, jagged ridges and contrasting swales and alluvial washes are highly intact, with vivid form, line, color and texture. Panoramic elevated views of the vast, largely visually intact Chuckwalla Valley and Ford Dry Lake are back-dropped by distant views of the Chuckwalla and Little Chuckwalla Mountains to the south.

Viewer Concern: Again, BLM considers all areas of the CDCA to have high viewer sensitivity, and this would be even more so within the wilderness areas and elevated viewpoints, where the panoramic views, sensitivity levels, and scenic values generally would be particularly high.

Viewer Exposure: As indicated in the viewshed mapping of **VISUAL RESOURCES Figure 2**, the project site would be visible from various points within the Palen and McCoy Mountains, primarily south-facing ridges of the Palen Mountains, and west-facing slopes of the McCoy Mountains. These elevated viewpoints are the only ones from which the expanse of the project site could be clearly seen. Visibility would range from moderate to moderately low as a function of height and distance. Within middle ground distance (under roughly 5 miles), the vertical angle of view from elevated

portions within the mapped viewshed would be sufficiently great, and sufficiently near, to expose the expanse of the mirror fields to view with a moderate level of dominance within the overall field of view. Viewers would be near enough to be looking 'down' on the expanse of the mirror field, at a relatively perpendicular vertical angle, as indicated in KOP 4a. In contrast, from more distant portions of the viewshed (very roughly beyond 5 miles), the angle of view would decrease as a function of distance, becoming more oblique so that the project site would occupy a smaller proportion of the overall field of view. With increasing distance viewers are no longer looking 'down' at the project, but 'across' it at a flat (oblique) angle that results in considerable foreshortening of the mirror field, reducing its expanse to a relatively narrow area, as indicated in KOP 4b. Viewer numbers are not known, but are considered to be low. Motorized travel is not allowed within the WA. The nearest (closed) jeep trail is roughly 2.5 aerial miles from KOP 4a; the nearest motorized portion of that trail is several miles to the southwest of that point. The McCoy Mountains, located largely though not entirely outside of the designated WA, appear from aerial photos to be more accessible by jeep trail. However, distance to the project site from elevated portions of the McCoy Mountains is well over 5 miles at the nearest points, with a resulting decrease in visual exposure due to distance and oblique vertical angle, as described above.

There are no designated trails within the WA, but closed jeep trails are present in the valley and can be used for hiking. The accessibility of elevated viewpoints within the middle-ground distance zone, and therefore the potential number of viewers, is presumed to be low. In addition, the extent of elevated viewpoints within middle-ground distance of the project site is very limited, essentially to portions of one ridge north of the site, as indicated in the mapped computer-generated viewshed depicted in Visual Resources Figure 2. View duration at both elevated portions of the viewshed (Palen and McCoy Mountains) is relatively high due to the fact that any viewers would be on foot. In the Palen Mountains, however, the duration of middle-ground views is limited somewhat by the very small area in which project visibility occurs at those distances and corresponding viewing angles; hikers on this ridge would presumably soon leave the ridge on which the project is seen at perpendicular vertical angles and middleground distance. Beyond this small portion of the viewshed, visual magnitude of the mirror fields would fall off due both to distance, and to increasingly oblique (flat) vertical viewing angle. (Visual magnitude decreases as the square of distance). For these reasons – the limited extent of this portion of the viewshed, and resulting limited viewer numbers and view duration - viewer exposure to the project from within the elevated middle-ground, where viewing angles are more perpendicular and visual magnitude higher, is considered to be very limited. Viewer exposure to the site from the elevated background distance zone within the Palen and McCoy Mountains is considered to be moderately low: the area in which exposure occurs is much greater than within middleground; viewer numbers are likewise higher due to greater (motorized) accessibility in the McCoy Mountains, but remain relatively low, and visibility is considerably reduced by both oblique vertical viewing angle and reduced visual magnitude due to angle and distance. Because the viewer number and duration with moderate project visibility appears limited, overall viewer exposure is characterized as moderately low. Consequently, overall viewer sensitivity of these elevated viewpoints in the Palen and McCoy Mountains is considered moderate.

Palen-McCoy WA Lowland Viewpoints (No KOP)

Staff was unable to obtain photographs of a representative KOP in the lowland portions of the WA. However, studies of 3D ground-level views via Google Earth appeared to confirm viewing conditions that seem intuitively obvious; that is, from valley viewpoints north of the project site, the relatively level terrain relationship between viewers and site would be very similar to those depicted in KOPs 1 and 2. Because of the very oblique vertical viewing angle, the site would tend to be reduced to a very narrow horizontal line within the overall view in all but the foreground distance zone (under ½ mile), contributing to low viewer exposure. The vast horizontal scale of the site would remain evident, particularly within the middle-ground distance zone (under 5 miles). The number of viewers from such lowland viewpoints is not known, but is considered to be relatively low based on anecdotal knowledge of BLM staff. The likely number of viewers at foreground distance to the project would be insignificant and their view duration low. Numbers at middle-ground and background distances would be moderately low. Overall exposure would thus remain moderately low.

Thus, despite high visual quality and viewer concern, overall sensitivity is considered moderate.

Project Visual Description

Power Plant

The following description is taken entirely from the AFC project description (GSEP 2009a). **VISUAL RESOURCES Figure 4** depicts the layout of the two proposed project phases. **VISUAL RESOURCES Figure 5** depicts architectural elevations of the proposed power blocks. **VISUAL RESOURCES Figure 6** depicts the proposed solar collector mirror units. **VISUAL RESOURCES Figure 7** depicts the proposed Gen-Tie transmission line poles.

The proposed project would include an overall project footprint of approximately 1,800 acres (2.8 square miles), plus approximately 90 acres of linear facilities. The overall number of solar arrays is not identified in the AFC but the arrays are conceptually depicted in **VISUAL RESOURCES Figure 4**. Site elevation ranges from roughly 370 to 400 feet. This amount of fall (roughly 30 feet) over a minimum distance of over one mile results in a virtually flat site, with an overall .5% slope. Because the trough technology requires nearly level grades, the entire site would be benched and graded to 2% slope or less.

The collector field consists of multiple single-axis parabolic trough solar collectors, aligned on a north-south axis. Each parabolic trough focuses the sun's rays on a linear, length-wise heat collection element at the parabolic focal point. In addition, the project would include:

- Two power blocks, one per plant, including steam turbine generators and related equipment;
- Administrative building and warehouse between the two power plants; a control building within each power block; a water treatment building and other structures with an overall area of approximately 39,000 square feet (0.9 acre).

- Two 500,000 gallon cooling water storage tanks; a 1,250,000 gallon treated water storage tank; a 250,000 waste water storage tank; a 40,000 gallon demineralized water storage tank
- Two wet cooling towers
- A 270-by-400-foot switchyard
- 35 acres of paved area
- two 24-acre of evaporation ponds (one per generation unit, locate between the two mirror fields)

Construction Staging Area

The size of construction laydown areas is not described in the AFC but would be provided within the project site or, for construction of the proposed transmission gen-tie line, at Wiley's Well Rest Area southeast of the site north of I-10. Project construction is expected to last 37 months.

Site Grading

Site grading would potentially represent a substantial visual component of the proposed project during construction. After construction, grading of roads, laydown areas and other activities outside the main project footprint would remain visually disturbed unless restored. Surface disturbance of the proposed site, as in most desert landscapes of the region, can often result in high contrast between the disturbed area and surroundings, due to high contrast between the disturbed soil color and albedo, and the color and albedo of the existing undisturbed, vegetated surface. Furthermore, effectiveness of revegetation in this arid environment is difficult, of limited effectiveness, and capable of recovery only over a very long-term time frame.

Plant Night Lighting

Project lighting is not described, but would be designed to provide 'minimum illumination needed to achieve safety and security.'

Linear Facilities

Linear facilities would include:

- a six-mile long, eight-inch natural gas pipeline connecting to a Southern California Edison pipeline north of I-10. The pipeline ROW would follow the proposed gen-tie transmission line alignment.
- A gen-tie transmission line connecting to the SCE Colorado River substation, consisting of 75-foot tall single-pole towers. The line would cross I-10 from north to south at Wiley's Well Road and join the Blythe Energy Project Transmission Line a short distance south of I-10 along Wiley's Well Road. Length of the line is not described in the AFC but appears from figures to be approximately 7.5 miles off-site, and roughly 3.4 miles within the site.

C.12.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Direct Project Impacts

Project Operation Impacts

Impacts of Structures on Key Observation Points

KOP 1 - Ford Dry Lake Bridge Over I-10 (VRI Class III)

Visual Resources Figures 8A and 8B depict the view of the site from KOP1, at a middle-ground distance of approximately 3 miles looking northward, and is representative of the view of motorists on I-10 at their nearest point to the project. As depicted in Figure 8B (Phases 1 and 2), the project would occupy a vast horizontal area, extending across the entire width of the field of view. However, as illustrated in the simulation, the proportion of the field of view at this distance remains very small due to the level viewing relationship, low facility height, and distance. Staff understands that frequently, the level of brightness of the mirror field could be much greater than depicted in the simulation, substantially increasing the project's level of contrast under certain conditions. In general, the thin horizontal line of the mirror field mimics the predominantly horizontal lines of the broad, level foreground lakebed. A small amount of vertical form contrast is visible from the power blocks, warehouses, cooling towers and other site buildings, but at this distance the contrast is minimal and largely attributable to color contrast.

Spatial and scale dominance of the vast mirror fields is potentially great, but again greatly moderated by the very narrow portion of the view affected. Dominance would be accentuated during conditions of bright mirror reflection, which would draw attention to the facility. Overall, however, visual dominance of the project from this typical highway viewpoint would be moderately low under most conditions, to moderate during times of bright reflection.

View blockage would be negligible. Taller structures such as the control building and transmission towers would intrude slightly into the view of background bajadas but would remain at a low level. This intrusion would be reduced greatly by Condition of Certification VIS-1, requiring painting of structures in colors selected to blend with the background characteristic landscape.

Overall visual change to viewers on I-10 is thus considered moderately low, or moderate during the brightest periods of diffuse glare as indicated in **Visual Resources Figure 12** (below). Visual change could rise to a moderately high level if viewers were exposed to bright point spread reflections of the sun as depicted in **Visual Resources Figure 13** (below). With staff-recommended Condition of Certification VIS-4, bright point reflections could be blocked, reducing glare to occasional episodes of moderate visual change from diffuse reflection from the mirror fields as a whole. With all recommended conditions of certification, overall visual change would thus remain moderate. Depending upon lighting conditions, the project would range from weak to moderate levels of visual change, would attract some attention but would not dominate the existing landscape.

In the context of the setting's moderately high visual sensitivity, this moderate level of visual change would, with recommended conditions of certification, be less-than-significant.

Mitigation – To minimize form and color contrast of the taller project facilities, staff recommends Condition of Certification VIS-1, Surface Color Treatment of Non-Mirror Structures. To minimize potential bright reflective glare effects, staff recommends Condition of Certification VIS-4, Reflective Glare Mitigation. To reduce other visual contrasts from roads, structures, buildings, and support infrastructure, staff recommends VIS-6, Reduction of Form, Line, and Texture Contrast.

KOP 2 -Wiley's Well Bridge Over I-10 (VRI Class III)

Visual Resources Figures 9A and 9B depict the view from KOP 2, Wiley's Well Rest Area, approximately 5 miles southeast of the project site. It is also representative of the views of motorists on I-10 as they enter the middle-ground distance zone from background distance. The photograph actually depicts views from atop the Wiley's Well over-crossing bridge and is slightly elevated above the main highway and rest area. Actually, the project mirror fields would not generally be visible from the rest area itself due to foreground anomalies in terrain, which block views to the site from the rest area.

Staff comment on AFC simulation of KOP 2: The simulation of KOP 2 is framed in such a way as to omit proposed project transmission towers closer than three miles in distance. However, the proposed transmission line would actually be the most prominent project feature from the vicinity of Wiley's Well Road, with the nearest poles paralleling I-10 a short distance to the north (roughly ¼-mile for one mile; less than ½-mile for one mile), and then paralleling Wiley's Well Road immediately south of the over-crossing. There are thus no simulations of the transmission line within the foreground distance zone where it would appear most prominent.

As suggested in the simulation of KOP 2, visual contrast of the mirror fields at background and far-middle-ground viewpoints similar to this would be low. On occasions of greatest reflective brightness, contrast could rise to moderate levels. With staff-recommended glare mitigation measures, bright spot reflections of the sun would not be anticipated, as discussed further below.

The proposed transmission line and towers however would be visible in the foreground from Wiley's Well Road and vicinity, including I-10. The portions of the transmission line following Wiley's Well Road to the interconnection with the Blythe Project Transmission Line would not be a concern because views southward toward this segment include a very prominent communication tower adjacent to the interchange, the Blythe transmission line at a distance of roughly 1-1/4 mile, and Chuckwalla Valley and Ironwood State Prisons at a distance of roughly 3 miles to the south. However towers and lines paralleling I-10 would introduce a moderately prominent discordant element into the freeway foreground, with strong vertical line and form contrast for a roughly two-mile segment of highway. **Visual Resources Figure 9C** depicts the portion of I-10 in which the proposed transmission line would parallel the highway at foreground distance, as viewed from the Wiley's Well Road overcrossing.

At this distance and horizontal viewing angle, the mirror fields' spatial and scale dominance would remain low, occupying a small portion of the field of view. The segments of the proposed transmission line in the I-10 foreground would exert moderately strong contrast and dominance.

View blockage due to the mirror fields would be negligible. The transmission line would intrude into the foreground of northward views from the highway toward the Palen Mountains, degrading the quality of those views for a distance of roughly two miles.

Overall visual change of the mirror fields from this location and others at a similar distance zone would thus be low and impacts relatively minor.

The proposed transmission line, including 75-foot single-pole transmission towers, however, would be an obtrusive element in the foreground of views for roughly two miles of I-10 and, in the context of moderately high viewer sensitivity, could represent a substantial impact. Staff thus recommends Condition of Certification VIS-1, Surface Color Treatment of Non-Mirror Structures, to lower color contrast of the proposed transmission poles and blend with the visual background; and Condition of Certification VIS-3, Realignment and Visual Mitigation of Proposed Transmission Line, to reduce the contrast of transmission towers by use of lattice-style towers, and to minimize the portion of the ROW within foreground viewing distance of I-10 by ½-mile setbacks from the highway. Setbacks of transmission lines, however, shall be determined consistent with any cultural or biological constraints identified in those portions of this Staff Assessment. With these measures, portions of the new line beyond foreground distance would exert moderately low overall visual change under most viewing conditions. Foreground portions of the line would remain obtrusive but would be substantially reduced in extent. With these measures, impacts to motorists and rest area visitors would be adverse, but less-than-significant.

A proposed construction laydown area would be located near this KOP, with potentially substantial visual impacts to visitors at the rest area for the period of construction. This impact is discussed further under Project Construction Impacts, below.

Mitigation - To minimize adverse impacts of proposed transmission poles, staff recommends Condition of Certification VIS-1 and VIS-6 to be applied to the proposed gen-tie transmission poles; and Condition of Certification VIS-3 to reduce the visual contrast of towers and the length of the segment of transmission line within foreground distance of Highway I-10.

KOP 3 - Corn Springs BLM Road

Visual Resources Figures 10A and 10B depict KOP 3, the view from Corn Springs Road, an unpaved BLM road leading to a campground and trailhead approximately 14 miles southwest of the project site adjoining the Wilderness Area. This KOP was selected by BLM staff as representative of an actively used recreational destination within the project viewshed. However, at this far background distance, project visibility would be limited, despite the elevated viewing position in relation to the project.

As described in Section C.12.4.1, overall visual sensitivity from this viewpoint is considered to be moderately high. The KOP is located within an area designated as VRM Class I, since it is within the Chuckwalla WA. Nearby areas outside the WA were assigned VRI/IVRM Class II.

As depicted in **Visual Resources Figures 10A and 10B**, the elevated location within the Chuckwalla Mountains presents a panoramic view of a vast expanse of the valley floor. However, at this far background distance the project, while visible, would exhibit a low level of overall contrast. The simulation depicts hazy conditions that reduce visibility of the project, and those conditions would not always be the case. The project would be evident to viewers, drawing attention by its textural and color contrast, and the valley floor would lose its existing highly intact, undisturbed character. That level of contrast would be greater periodically, during instances of higher reflected glare, particularly in the afternoon. However, the project at this distance would have low form and line contrast with its setting and would remain visually subordinate to the background mountains, valley floor, and Palen and Ford Dry Lakes.

Spatial and scale dominance of the project at this distance would be low, subordinate to other features dominating the view, particularly the Palen Mountains. The project would occupy a small portion of the overall view.

View blockage would be negligible. The low project features would not intrude into views of the mountains or other scenic elements.

Overall visual change from the project at this distance would thus range from low to moderately low depending upon brightness of reflected glare. In the context of moderately high visual sensitivity, this would represent a less-than-significant impact.

KOP 4a, 4b – Palen/McCoy Mountains Elevated Viewpoints

VISUAL RESOURCES Figure 11A is a virtual view created with Google Earth to simulate views toward the project site from the nearest ridges of the Palen Mountains at a distance of roughly 3.75 miles to the nearest boundary of the project site. Elevation is approximately 1,475 feet or roughly 1,100 feet above the project site. It is representative of a small area of the nearest ridge of the Palen Mountains north of the project site with views of the project that fall within the middle-ground distance zone (under 5 miles). This one ridge is the only elevated location with views to the project site from middle-ground distance. **VISUAL RESOURCES Figure 11B** is a similar virtual view from the McCoy Mountains at a background distance of roughly 6.6 miles and elevation of 2,250 feet. It is representative of the more extensive portions of the McCoy and Palen Mountains from which the project would be visible at background distance (over 5 miles) as depicted in viewshed mapping in **VISUAL RESOURCES Figure 2**. Both schematic simulated views are created in Google Earth from accurately scaled layouts of the project footprint, and have been cropped to emulate a ‘normal’ camera lens (approximately 40 degree horizontal angle of view).

KOP 4a (Elevated Middle-Ground). As suggested in **VISUAL RESOURCES Figure 11A**, from elevated middle-ground viewpoints in the Palen Mountains, the vertical angle of view is such that visual exposure of the mirror fields would exhibit moderate

rectilinear form contrast, as well as strong color and texture contrast with the setting. The latter, however, would vary greatly according to changing brightness levels of diffuse reflected sunlight. At this height and distance, the project would appear as more than a thin contrasting line, as it would in views from the valley; however, the angle of view also remains sufficiently oblique that the proportion of the overall view occupied by the mirrors is moderate. Taller project structures would present some vertical form contrast, but would be seen against the background of the mirror fields, reducing character contrast. At this distance, the relative contrast and dominance from the non-mirror structures would be subordinate to the mirror fields, and would be reduced by painting to blend with the surrounding landscape under staff-recommended Condition of Certification VIS-1 and VIS-6. The project would block views. It is not possible for staff to predict the brightness of reflection or the frequency of distracting or nuisance levels of glare to be anticipated without more experience with similar projects viewed from similar viewpoints. However, based on aerial photographs of existing trough projects, as illustrated in **VISUAL RESOURCES Figure 12**, staff concludes that overall visual change from the project would vary from moderate to moderately strong levels according to time of day and brightness of diffuse reflection.

In the context of moderate visual sensitivity, this could represent an adverse visual impact under conditions of bright reflection. However, taking into account both the episodic nature of bright reflections, and the very low number of viewers from this middle-ground portion of the viewshed, the level of impact is considered to be less-than-significant.

VISUAL RESOURCES Figure 12 depicts photos of similar solar trough projects, including oblique aerial photos of the 64 MW Acciona Nevada Solar One pilot project. As illustrated in these photographs, the appearance of solar trough projects from elevated viewpoints changes substantially according to time of day and sun angles to the viewer, ranging from a brightly lit surface, to reflections of the sky, to dark colors, each condition contrasting with the surroundings in a different way and degree. Photo 12a also illustrates the phenomenon in which bright spread reflections of the sun's image may cause bright linear or point reflections at certain sun/viewer angles. This impact is discussed below under the analysis of glare impacts. Note also the large evaporation ponds, which are visible from elevated viewpoints and display strong color contrast in some photos. According to the AFC there would be two 24-acre evaporation ponds, one for each generation unit, located between the two mirror fields ((GSEP 2009a).

KOP 4b (Elevated Background). **VISUAL RESOURCES Figure 11B** is representative of background distance zone viewpoints within the Palen and McCoy Mountains. It is a virtual view of the project footprint from the ridge above McCoy Springs, a short distance from a jeep trail at the spring, roughly 6.6 miles from the project site at an elevation of approximately 2,250 feet or roughly 1,800 feet above the project site.

As suggested in the figure, from this high point of the first ridge facing the project site, the project footprint appears relatively oblique, with moderately low rectilinear form and line contrast. Taller project structures would present some vertical form contrast, but at background distance, this component of project contrast would be relatively low. Color

and texture contrast of mirror fields would again vary from moderate to strong levels depending upon light conditions. Overall, contrast would be moderate.

At this distance, the project occupies a moderate proportion of the field of view and remains subordinate to the visual foreground and the expanse of the valley floor. The project would block views of the portion of the valley floor it occupies, but only to a very limited degree due to the very oblique vertical viewing angle.

Overall visual change from the project at such elevated background viewpoints would thus be moderate. The project would be very evident and begin to attract attention, but would remain subordinate within the existing setting.

In the context of moderate overall visual sensitivity, this could represent an adverse visual impact, particularly under episodic conditions of bright reflection, but is considered to be less-than-significant. As distance to viewpoints increased, the level of impact would decline further.

Palen-McCoy WA Lowland Viewpoints (No KOP)

As indicated in the viewshed mapping of **VISUAL RESOURCES Figure 2**, the project would be visible from nearly the entire radius of the valley floor around it within the middle-ground distance zone (less than 5 miles), including a large portion within the Palen-McCoy WA to the north and northeast of the site. A large area of lowlands within the WA at background distance (beyond 5 miles) would also have views of the site.

Staff was unable to access or obtain photographs of a representative KOP in these lowland portions of the visual middle-ground within the WA. However, studies of 3D ground-level views using Google Earth appeared to confirm viewing conditions that seem intuitively obvious; that is, from valley viewpoints north of the project site, the relatively level terrain relationship between viewers and site would be very similar to those depicted in KOPs 1 and 2. Due to the very level viewer-to-site relationships, the project, which is low in height, would appear as a thin horizontal line in all but foreground (1/2-mile and under) views. As from KOP 1, the project would extend over a vast horizontal extent of the view from middle-ground viewpoints. However, the proportion of the overall field of view occupied by the mirror fields would be small due to the level viewing conditions and low project height, appearing as a thin contrasting line. The field of view would be strongly dominated by an expansive visual foreground, and visually dominant mountains in the middle-ground and background. As from KOP 1, project contrast and dominance in the middle-ground distance zone would range from moderately low to moderate depending upon brightness of reflective glare. However, with staff-recommended Condition of Certification VIS-4, bright spread reflection as seen from valley floor viewpoints would be screened by slatted fencing at the project perimeter. Glare-related contrast and dominance would consequently be kept to moderately low levels. Project structures would also exert some vertical form contrast. However as noted under the discussion of KOP 1, at distances of roughly 2-1/2 or 3 miles, structure contrast is subordinate within the overall view and attributable primarily to color contrast. With staff-recommended Condition of Certification VIS-1, color contrast would be substantially reduced to blend with the darker visual background and reduce form and line contrast. The project would not block or intrude into scenic views

except from foreground locations. Overall visual change with recommended mitigation would thus be moderately low.

The number and duration of views within foreground and very-near-middle-ground viewpoints where the project could have high contrast is considered to be very low and thus of minor concern. Therefore, notwithstanding a moderately high level of viewer sensitivity, this would represent a less-than-significant level of impact.

Glare Impacts

The primary source of potential glare from the project is the mirrored surfaces of the solar collector arrays. Staff observations confirm that during certain times of day the mirror units can produce substantial glare and that such glare can be experienced by the public from locations in the project vicinity as intrusive nuisances and may be a distraction, but generally do not pose a visual hazard except for persons within 60 feet of the plant perimeter fence. Public exposure to the Genesis project at this distance is not anticipated. There are no known quantitative thresholds for determining unacceptable levels of nuisance or discomfort glare.

Visual Resources Figure 13A depicts a typical project reflection as documented by staff at the Kramer Junction SEGS project in mid-morning. **Visual Resources Figure 13B** depicts a view of the Acciona Nevada One trough project at middle-ground distance. When looking toward the mirrors, the bright spots depicted are believed by staff to be spread reflections of the sun. They are seen when the observer is off-axis from the focal plane of the troughs and, as can be seen in the photos, may appear to be very bright. The bright spots also appear to 'follow' the viewer as one's relationship to the sun changes. Based on data on file with the Commission, staff concludes that when trough systems rotate from stow position to tracking position in the morning and the reverse in the evening they produce a linear reflected solar image which may be visible briefly to nearby observers. As illustrated in **Visual Resources Figure 13B**, these reflections may, under the right conditions, be prominently visible from several miles away. Within a zone of 20 meters from the plant perimeter this image may exceed a level deemed safe for the human eye of 4.5 kW/m^2 . Beyond this distance, though potentially very bright, they are not believed to pose a physical hazard. At a minimum, however, similar off-site glare observed by staff was considered a nuisance, and felt to be a discomfort if directly observed for more than a few moments.

In order to substantially reduce the brightness of such spread reflections of the sun for valley floor viewers, staff recommends Condition of Certification VIS-4, Reflected Glare Mitigation, requiring slatted perimeter fencing. Based on available data, staff concludes that implementation of this measure would prevent bright spot reflections for viewers at ground level on the valley floor, including motorists on Highway I-10.

Nighttime light pollution as a result of the project is a concern in the project vicinity. The existing Chuckwalla Valley within the project viewshed is essentially dark at night. The pristine, unlit night sky is an important part of the camping experience for many visitors to remote areas such as the nearby Wilderness Areas. Unmitigated night lighting of the project could represent a substantial impact to the experience of campers in these wilderness areas.

Project lighting is not described in detail in the AFC, but would be designed to provide 'minimum illumination needed to achieve safety and security.'

To minimize potential nighttime light pollution, address potential impacts from construction lighting, and further minimize potential night lighting impacts to campers in the Palen-McCoy Wilderness, staff recommends Condition of Certification VIS-2. This measure would require that all exterior lighting be designed such that lamps and reflectors are not visible from beyond the project site; lighting does not cause excessive reflected glare; direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting, if any; and illumination of the project and its immediate vicinity is minimized to an 'as needed' basis wherever feasible consistent with safety.

Visible Vapor Plume Impacts

The proposed project is a thermal solar design that requires cooling to condense the steam that is recycled. The applicant has proposed two seven-cell mechanical-draft cooling towers for project cooling. The applicant has not proposed to use any methods to abate visible plumes from the cooling towers.

Staff completed a modeling analysis for the applicant's proposed unabated cooling tower design using the Combustion Stack Visible Plume (CSVP) model to estimate plume frequency and plume dimensions for the cooling tower exhaust. This model provides conservative estimates of both plume frequency and plume size. The modeling study may be found in its entirety in **Appendix VR-2**.

Based on this analysis, visible water vapor plumes from the proposed Genesis Solar cooling tower would occur 10.75% seasonal daylight clear hours. Energy Commission staff apply a 20% seasonal daylight clear hour criterion for identifying potentially significant visible plume impacts. Because visible plumes are anticipated to occur for less than 20% of seasonal daylight clear hours, no significant impact is anticipated and no further modeling was performed.

Due to their small size and limited operation significant visible water vapor plumes are not expected from the two small Genesis auxiliary boilers.

Project Construction Impacts

Construction Staging Area

The size of construction laydown areas is not described in the AFC but would be provided within the project site or, for construction of the proposed transmission gen-tie line, at Wiley's Well Rest Area southeast of the site north of I-10. Project construction is expected to last 37 months. Laydown within the project site would thus be potentially visible but would occupy a smaller area than the project itself. Laydown would thus have substantially lower impact than either site grading or the completed project itself. The effects of laydown within the main project footprint would be less than significant. Laydown for construction of the proposed transmission line is proposed near the Wiley's Well Rest Area. Because of proximity, this laydown area could potentially be visually prominent, and represent an adverse effect on the visual quality of the rest area for the high numbers of visitors to this facility over the period of transmission line construction,

which is not quantified in the AFC. This could represent a substantial visual impact. In order to minimize these impacts, staff recommends Condition of Certification VIS-5, Visual Mitigation and Revegetation of Staging Area, including screening of the laydown area with earth berms, opaque fencing, and/or other measures to minimize visibility from within the main rest area, consistent with any cultural or biological resource constraints identified in those portions of this Staff Assessment; and restoration and revegetation of the laydown area after completion of construction, again consistent with cultural and biological constraints. Staff also recommends VIS – 6, Reduction of Form, Line, and Texture Contrast to minimize the contrast of laydown areas with associated graded landscapes, roads, and other infrastructures. With these recommended measures, impacts would be reduced to a less-than-significant level.

Site Grading

Site grading would potentially represent a substantial visual component of the proposed project during construction. Surface disturbance of the proposed site, as in most desert landscapes of the region, would result in high contrast between the disturbed area and surroundings, due to high contrast between the disturbed soil color and albedo, and the color and albedo of the existing undisturbed, vegetated surface. Furthermore, effectiveness of revegetation in this arid environment is difficult, often of limited effectiveness, and capable of recovery only over a very long-term time frame. Although grading impacts would be similar in extent to the completed project itself, the latter were found to be less-than-significant from all KOPs. Therefore, grading impacts would also be less-than-significant.

Indirect Impacts

No indirect visual impacts of the project were identified.

Closure and Decommissioning Impacts and Mitigation

Permanent closures would require the applicant to submit to the Energy Commission a contingency plan or a decommissioning plan. A decommissioning plan would be implemented to ensure compliance with applicable LORS, removal of equipment and shutdown procedures, site restoration, potential decommissioning alternatives, and the costs and source of funds associated with decommissioning activities.

The removal of the existing facility would leave a very prominent visual impact over the entire site due to form, line, color and texture contrast created between graded or disturbed soil areas and undisturbed areas in the region of the project site. This color contrast is due particularly to the removal of the dark color element contributed by normal scrub vegetation cover. After decommissioning, the site would leave a rectilinear area of form, line, color and texture contrast visible mainly to elevated locations within the adjacent wilderness area. Revegetation of areas in this desert region are difficult but have been implemented by the BLM with success over time. Thus, visual recovery from land disturbance after closure and decommissioning could take place, although over a long period of time, with implementation of an active and comprehensive revegetation program for the site.

C.12.4.3 CEQA LEVEL OF SIGNIFICANCE

Appendix G of the CEQA Guidelines four significance criteria for evaluating aesthetic impacts, as follows.

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the project viewshed. However, as discussed above, BLM considers that a primary purpose of the CDCA is to recognize and conserve the natural beauty and scenic recreational qualities of the California Desert. As described above, various KOPs with high levels of viewer concern for scenic values would be affected by the project, including motorists on Highway I-10, and visitors to the Palen McCoy Wilderness Area. Because these effects were determined to be less than significant in the staff analysis presented above, significant adverse effects on scenic vistas are not anticipated.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The project is adjacent to Highway I-10, which is not listed as an eligible State Scenic Highway. No notable scenic features or resources are present on-site. The project would not directly damage any specific scenic resources located within the project site. Potential effects on scenic resources within the project viewshed in general are discussed under Item C, below.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the main analysis above, the project could degrade the existing visual character and quality of views from Highway I-10 and the Palen McCoy Wilderness. However, with staff-recommended Conditions of Certification, these impacts are considered to be either less-than-significant, or mitigable to less-than-significant levels.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Reflected glare is an issue of concern for the Genesis Solar Project, primarily due to the potential to accentuate project contrast and aesthetic impact. Potentially affected receptors would include motorists on I-10 and at Wiley's Well Rest Area, and visitors to the Palen McCoy Wilderness.

Staff conducted an independent review of potential glare impacts. The results of this review are summarized in the discussion of Glare Impacts, above. With recommended Condition of Certification **VIS-4**, impacts could be reduced to less-than-significant levels.

Project lighting is not described in detail in the AFC, but would be designed to provide 'minimum illumination needed to achieve safety and security.' However, night lighting of control room, warehouses, administration building, project roadways, or security lighting could all potentially contribute to nighttime light pollution.

To minimize potential night lighting impacts to campers in the Palen McCoy Wilderness, staff recommends Condition of Certification **VIS-2**. This measure would require that all exterior lighting is designed such that lamps and reflectors are not visible from beyond the project site; lighting does not cause excessive reflected glare; direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting, if any; and illumination of the project and its immediate vicinity is minimized and kept to an 'as needed' basis wherever feasible consistent with safety.

With the measures in this condition, project night lighting would be reduced to a less-than-significant level.

C.12.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would essentially be Unit 1 of the proposed project, including a 125 MW solar facility located within the boundaries of the proposed project as defined by NextEra. This alternative is analyzed for two major reasons: (1) it eliminates about 50 percent of the proposed project area so all impacts are reduced, and (2) by eliminating the eastern solar field, it would reduce the water required for wet cooling by 50 percent. The boundaries of the Reduced Acreage Alternative are shown in **Alternatives Figure 1**.

C.12.5.1 SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates effects to the eastern 125 MW solar field and relocates the gas yard approximately 1.75 miles northwest of its present location. As a result, the environmental setting consists of the western portion of the proposed project, as well as the area affected by the linear project components, and is as described for the Proposed Project in section 14.4.1.

C.12.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Project Operation Impacts

Impacts of the Reduced Acreage Alternative would be similar in character but greatly reduced in extent and degree compared to the Proposed Project from all KOPs. Under the Proposed Project, staff concluded that impacts to all KOPs with recommended conditions of certification could be reduced to less-than-significant levels. Those impacts would be reduced further under the Reduced Acreage Alternative.

Impacts of non-mirror project structures would be reduced in extent compared to the Proposed Project but could still result in form, line and color contrast that would introduce an industrial character into the view of all KOPs. Staff therefore recommends Condition of Certification VIS-1 to reduce contrast of non-mirror project structures. Similarly, night lighting impacts would be reduced but not eliminated and could result in adverse nighttime light pollution. Staff therefore recommends Condition of Certification VIS-2 to reduce and minimize potential nighttime lighting impacts.

However, the anticipated operation and construction impacts of the proposed gen-tie transmission line would remain the same as under the Proposed Project, and potentially significant. Staff therefore recommends Conditions of Certification VIS-3 and VIS-5 for the Reduced Acreage Alternative as well, in order to reduce potential impacts of the transmission line to less-than-significant levels.

Contributions to heightened project contrast due to reflective glare would be reduced because the area and extent of the project footprint would be reduced by half. However, bright spread reflections could still be visible off-site under the Reduced Acreage Alternative. Staff therefore recommends Condition of Certification VIS-4 under this alternative to screen potential bright off-site reflection impacts.

Potential visible vapor plume impacts under the Proposed Project were found by staff to fall below Energy Commission impact thresholds and therefore to be less-than-significant. Visible vapor plumes would presumably be reduced substantially as compared to the Proposed Project, reducing this impact further and representing an overall visual improvement as compared to the Proposed Project.

Project Construction Impacts

Presumably the area needed for project laydown under Alternative 1 would be proportionately less than under the proposed project, both in extent, and in duration. However, impacts from laydown within the project site were considered to be less-than-significant in impact. This would also be true of impacts under the Reduced Acreage Alternative.

Laydown for construction of the proposed transmission line would take place near the Wiley's Well Rest Area under this alternative. Presumably, the length of time for this portion of project construction would be the same as that under the Proposed Project thus resulting in substantial visual impacts to the high numbers of visitors to this facility over the period of transmission line construction, which is not described in the AFC. In order to minimize these impacts, staff recommends Condition of Certification VIS-5, Visual Mitigation and Revegetation of Staging Area, including relocation of the laydown site to the south of the Wiley's Well Road interchange; or screening of the laydown area with earth berms, opaque fencing, and/or other measures to minimize visibility from within the main rest area; restoration and revegetation of the laydown area after completion of construction. Staff also recommends Condition of Certification VIS-6, Reduction of Form, Line, and Texture Contrast, to minimize the contrast of solar panels and supports, laydown areas, roads, buildings, other structures, and graded landscapes. Site grading impacts would be substantially less than under the Proposed Project because the affected area would be less. These impacts would be less-than-significant under all action alternatives.

C.12.5.3 CEQA LEVEL OF SIGNIFICANCE

Appendix G of the CEQA Guidelines four significance criteria for evaluating aesthetic impacts, as follows:.

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the project viewshed. However, as discussed above, BLM considers that a primary purpose of the CDCA is to recognize and conserve the natural beauty and scenic recreational qualities of the California Desert. As described above, various KOPs with high levels of viewer concern for scenic values would be affected by the project, including motorists on Highway I-10, and visitors to the Palen McCoy Wilderness Area. These effects would be substantially less under the Reduced Acreage Alternative than under the Proposed Project. Because potential visual effects were considered to be mitigable with staff-recommended mitigation measures under both the Proposed Project and Reduced Acreage Alternative, substantial adverse effects on scenic views are not anticipated under either alternative.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The project is adjacent to Highway I-10, which is not listed as an eligible State Scenic Highway. No notable scenic features or resources are present on-site. The project would not directly damage any specific scenic resources located within the project site. Potential effects on scenic resources within the project viewshed in general are discussed under Item C, below.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the main analysis above, the project could degrade the existing visual character and quality of views from Highway I-10 and the Palen McCoy Wilderness. These effects would be substantially less than under the Proposed Project because the affected area would be roughly ½ of the Proposed Project. However, with staff-recommended Conditions of Certification, these impacts are considered to be mitigable to less-than-significant levels under all action alternatives, including the Reduced Acreage Alternative.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Reflected glare is an issue of concern for the Genesis Solar Project, primarily due to the potential to accentuate project contrast and thus aesthetic impact. Potentially affected receptors would include motorists on I-10 and at Wiley's Well Rest Area, and visitors to the Palen McCoy Wilderness. Under the Reduced Acreage Alternative these effects would be substantially less, because the affected area would be roughly ½ of the Proposed Project. However, the potential to create occasional, very bright spread reflections of the sun visible at a distance would remain under this alternative and could be substantial. With recommended Condition of Certification **VIS-4**, however, this impact would be reduced to a less-than-significant level.

Project lighting is not described in detail in the AFC, but would be designed to provide 'minimum illumination needed to achieve safety and security.' However, night lighting of

control room, warehouses, administration building, project roadways, or security lighting could all potentially contribute to nighttime light pollution.

To minimize potential night lighting impacts to campers in the Palen McCoy Wilderness, staff recommends Condition of Certification **VIS-2**. This measure would require that all exterior lighting is designed such that lamps and reflectors are not visible from beyond the project site; lighting does not cause excessive reflected glare; direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting, if any; and illumination of the project and its immediate vicinity is minimized and kept to an 'as needed' basis wherever feasible consistent with safety.

With the measures in this condition, project night lighting would be reduced to a less-than-significant level.

C.12.6 DRY COOLING ALTERNATIVE

This section identifies the potential impacts of using air-cooled condenser (ACC) systems rather than the cooling towers proposed by NextEra for the Genesis project. It is assumed that the ACC systems would be located where the cooling towers are currently proposed for each of the two 125 MW power block, as illustrated in **Alternatives Figure 2** (see Section B.3).

Approximately 18 ACC fans would be required for each of the two solar fields. The 18 fans, or ACC's, would operate when the ambient temperature is above 50 degrees Fahrenheit. When the temperature is below 50 degrees Fahrenheit, only 10 of the fans would be used (GSEP 2009f). The 18 ACC fans described in the GSEP cooling study would have a length of approximately 279 feet, a width of approximately 127 feet, and a height of 98 feet (GSEP 2009f). However, based on the ACC preliminary designs for nearby solar thermal projects in similar ambient temperatures, an additional 11,690 square feet could be required for siting of the fans and the fans would be up to 120 feet in height. In addition to the ACC fans, NextEra would use a small Wet Surface Air Cooler when needed to provide auxiliary cooling during extremely hot days (GSEP 2009f). This alternative is analyzed because it would reduce the amount of water required for steam turbine cooling from 822 acre-feet per year (AFY) to 66 AFY. This reduction in water use would reduce impacts to water and biological resources.

C.12.6.1 SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates the use of wet-cooling towers and incorporated the use of air-cooled condensers (ACC) in the same location. As a result, the environmental setting would be the same as for the proposed project.

C.12.6.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Under the Dry Cooling Alternative, the ACC would be located immediately north of the proposed power block in the location where the cooling towers would be located for the proposed project. The ACC would appear as a large elevated box-like structure and

would range from 98 to 120 feet in height. The ACC fans would be at least double the height of any of the proposed components of the GSEP (GSEP 2009a). As such, the ACC would be prominently visible. The ACC facilities would have a much stronger industrial character due to greater structural complexity and highly metallic coloration and texture. However, the ACC fans would be located approximately 1,800 feet from the project fence line and would be surrounded by the solar trough fields.

Project Operation Impacts

Because of the increase in height by incorporating the ACC fans into the GSEP, there would be an increase in visual contrast, project dominance, and view blockage caused by the ACC structures when compared to views with the proposed wet-cooling system. However, in staff's opinion this difference would be meaningfully evident mainly from middle-ground KOPs, and not background distance zone KOPs. From middle-ground KOPs, including KOPs 1 and 4A, the structure would present increased vertical form, line and color contrast. This increase would tend to draw the eye of casual viewers to a greater degree than the Proposed Project structures. However, even at these middle-ground distances (3 miles and 3.7 miles respectively) the difference in vertical form contrast would not be so great as to qualitatively increase the overall level of visual change. The most noticeable component of increased structure contrast, particularly from KOP 1 and the highway generally, would be from color contrast if the ACC were light-colored or metallic, thus contrasting against the darker mountain background and drawing viewers' attention. With staff-recommended Condition of Certification VIS-1, Surface Treatment of Non-Mirror Project Structures, and Condition of Certification VIS-6, Reduction of Form, Line, and Texture Contrast, potential form, color, line, and texture contrast could be minimized to make the ACC blend in value with the dark mountain background. With this measure, overall project contrast would be reduced, the structure would be less likely to draw the attention of casual viewers, and overall visual change would remain moderate. Visual change of the alternative would be somewhat greater than the Proposed Project but would remain moderate and less-than-significant.

Apart from the change in structure contrast due to the increased height of the ACC compared to proposed structures, impacts of the Dry Cooling Alternative would remain largely as described for the Proposed Project. Potential glare impacts would be identical to the Proposed Project. Impacts from the proposed gen-tie line would remain the same. Therefore, staff recommends adoption of all Conditions of Certification as under the Proposed Project. With these measures, visual impacts of the Dry Cooling Alternative would be less-than-significant. There would be no visible vapor plumes under this alternative due to the replacement of wet cooling with dry cooling. Although visible plumes from the Proposed Project were found by staff to fall below Energy Commission thresholds of visual impact significance, the complete elimination of any visible plumes by air-cooling would represent an overall visual improvement compared to the Proposed Project.

Project Construction Impacts

Project construction impacts would be substantially the same as under the Proposed Project.

C.12.6.3 CEQA LEVEL OF SIGNIFICANCE

A. Would the project have a substantial adverse effect on a scenic vista?

No specific designated scenic vista locations were identified in the project viewshed. However, as discussed above, BLM considers that a primary purpose of the CDCA is to recognize and conserve the natural beauty and scenic recreational qualities of the California Desert. As described above, various KOPs with high levels of viewer concern for scenic values would be affected by the project, including motorists on Highway I-10, and visitors to the Palen McCoy Wilderness Area. These effects would be substantially similar under the Dry Cooling Alternative compared to the Proposed Project. Structure contrast would be higher due to the ACC structure, but this increase is considered to be mitigable with color treatment. Visible vapor plumes would be eliminated, representing an improvement over the Proposed Project. Because visual effects under the Proposed Project were considered to be mitigable to less-than-significant levels, and because overall impacts of the Dry Cooling Alternative would be substantially similar with recommended mitigation, substantial adverse effects on scenic views are not anticipated under this alternative.

B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

The project is adjacent to Highway I-10, which is not listed as an eligible State Scenic Highway. No notable scenic features or resources are present on-site. The project would not directly damage any specific scenic resources located within the project site. Potential effects on scenic resources within the project viewshed in general are discussed under Item C, below.

C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As described in the main analysis above, the project could degrade the existing visual character and quality of views from Highway I-10 and the Palen McCoy Wilderness. These effects would be substantially similar to those under the Proposed Project. Structure contrast would be higher due to the ACC structure, but this increase is considered to be mitigable with color treatment. Visible vapor plumes would be eliminated, representing an improvement over the Proposed Project. Because visual effects under the Proposed Project were considered to be mitigable to less-than-significant levels, and because overall impacts of the Dry Cooling Alternative would be substantially similar with recommended mitigation, this alternative is not expected to substantially degrade the existing visual character or quality of the surroundings.

D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

As under the Proposed Project, reflected glare would accentuate project contrast and thus increase aesthetic impact. Potentially affected receptors would include motorists on

I-10 and at Wiley's Well Rest Area, and visitors to the Palen McCoy Wilderness. Under the Dry Cooling Alternative these effects would be substantially the same as under the Proposed Project. Consequently, as under the Proposed Project, with staff-recommended Condition VIS-4, this impact is considered mitigable to a less-than-significant level.

Night lighting/light pollution impacts would be substantially the same as under the Proposed Project. Consequently, as under the Proposed Project, with staff-recommended Condition VIS-2, this impact is considered mitigable to a less-than-significant level.

C.12.7 NO PROJECT/NO ACTION ALTERNATIVE

There are three No Project/No Action Alternatives evaluated in this section, as follows:

No Project/No Action Alternative #1:

No Action on Genesis Solar Energy Project application and on CDCA land use plan amendment

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the views of the site are not expected to change noticeably from existing conditions under this alternative and, therefore, this No Project/No Action Alternative would not result in adverse visual, light, and glare impacts at this location. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations

No Project/No Action Alternative #2:

No Action on Genesis Solar Energy Project and amend the CDCA land use plan to make the area available for future solar development

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site will be developed with another solar technology. As a result, it is possible that views of the site

could change substantially based on the required buildings and structures on the site for the different solar technologies. Different solar technologies would create different visual effects based on the technology components. It is expected that the views of the site could change substantially with a different solar technology, similar to the changes in views under the proposed project. Therefore, this No Project/No Action Alternative could result in adverse visual, light, and glare impacts similar to the impacts under the proposed project.

No Project/No Action Alternative #3:

No Action on Genesis Solar Energy Project application and amend the CDCA land use plan to make the area unavailable for future solar development

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended so no solar projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, the views of the site are not expected to change noticeably from existing conditions under this alternative and, therefore, this No Project/No Action Alternative would not result in adverse visual, light, and glare impacts. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.12.8 CUMULATIVE IMPACTS

Section B.3, Cumulative Scenario, provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figure 1** and in **Cumulative Tables 1A and 1B**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate Chuckwalla Valley viewshed, as shown on **Cumulative Impacts Figure 2, I-10 Corridor Existing and Future/Foreseeable Projects, and Cumulative Tables 2 and 3**. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the I-10 Corridor Area. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in Section B.3 have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this SA/Draft EIS.

GEOGRAPHIC SCOPE OF ANALYSIS

Cumulative impacts could occur if implementation of the Genesis Solar Project would combine with those of other local or regional projects. The Genesis Solar Project is potentially associated with two types of cumulative impact:

1. cumulative impacts within the immediate, local project viewshed, essentially comprising foreseeable future projects in the Chuckwalla Valley;
2. cumulative impacts of foreseeable future solar and other renewable energy projects within the southern California Colorado (Sonoran) Desert, or other broad regional basin of the project's affected landscape type. The widest applicable basin of cumulative effect would include all of the southern California desert, or the Sonoran and Mojave desert landscapes extending into neighboring states. This analysis, focusing on regional effects of renewable projects only, is considered appropriate because the potential cumulative contribution of all other types of permissible development within this region is comparatively minor, and is dwarfed by the potential cumulative effect of renewable projects.

Local Projects (Project Viewshed)

Effects of Past and Present Projects

For this analysis, the following projects or developments are considered most relevant to effects on visual resources:

- Interstate 10 (I-10) (**Cumulative Table 2, item 1**)
- Chuckwalla and Ironwood State Prisons (**Cumulative Table 2, items 2 and 3**)
- Devers-Palo Verde Transmission Line (**Cumulative Table 2, item 4**)

Visual resources in the geographic area have been impacted by these past and currently approved projects as follows:

I-10 is an object of view from elevated KOPs in the Palen McCoy and Chuckwalla Wilderness Areas (WAs). It is also the viewshed's principal KOP, introducing large numbers of motorists into the area, many with relatively high scenic expectations and sensitivity. The two state prisons named are visible to the south of the highway within the same viewshed as the proposed project, but at a distance that renders them visually very subordinate. As such, the visual interaction between the project and these prisons is relatively weak. Similarly, the existing Devers-Palo Verde Transmission Line is visible within the same viewshed south of the highway, but tends to blend with its visual background, and is sufficiently distant as to remain visually subordinate. Together,

these existing projects have the effect of rendering the Chuckwalla Valley south of I-10 less visually intact than the views northward toward the project site and the Palen-McCoy Wilderness. However, taken together they are not so intrusive as to substantially detract from the moderately high overall sensitivity of the viewshed.

Effects of Reasonably Foreseeable Future Projects

Visual resources are also expected to be affected by the following reasonably foreseeable future projects as follows:

- Devers-Palo Verde 2 Transmission Line Project (**Cumulative Table 2, item D**)
- Blythe Energy Project Transmission Line (**Cumulative Table 2, item F**)
- Palen Solar Power Project (**Cumulative Table 2, item K**)

Contribution of the Genesis Solar Energy Project to Cumulative Impacts

Construction. The construction of the Genesis Solar Energy Project is expected to result in short term adverse impacts related to construction activities. It is expected that some of the cumulative projects described above which are not yet built may be under construction the same time as the Genesis Solar Energy Project. As a result, there may be substantial short-term impacts during construction of those cumulative projects related to visual resources.

The Genesis Solar Energy Project would be expected to contribute only a small amount to the possible short-term cumulative construction impacts related to visual resources because the principal anticipated construction impacts of the Genesis project are related to the transmission line construction laydown area near the Wiley's Well rest area. It is unlikely that the construction activities of the other named projects would occur within the same vicinity, so the likelihood of their visual interaction appears low.

Operation. The operation of the Genesis Solar Energy Project is expected to result in long-term adverse impacts during operation of the project related to visual resources. It is expected that some of the cumulative projects described above may be operational at the same time as the Genesis Solar Energy Project. As a result, there may be substantial long-term impacts during operation of those cumulative projects related to visual resources. The addition of the two proposed transmission lines in the same general corridor as the existing Devers-Palo Verde line have the potential to raise the cumulative level of contrast and dominance of the overall transmission corridor to a level that begins to attract attention and detract from the intactness and visual quality of the viewshed as seen from I-10. The project, through its proposed transmission line, would contribute incrementally to that increase in dominance of transmission lines within the Chuckwalla Valley.

Direct visual interaction of the Genesis and Palen power projects is expected to be relatively weak due to distance, and to the relatively subordinate level of dominance of the Genesis project as seen from I-10. The two projects would both be visible from viewpoints in a small portion of the Palen Mountains at background distances, although not in the same views, since they would be located in different directions (southwest and southeast, respectively). Both projects would be visible from KOP 3 (Corn Springs Road/Campground); the Palen Project would be visible at middle-ground distance from

Corn Springs Road, and from about 6 miles from Corn Springs Campground. The Genesis Project would also be visible at background distance in those views. The Genesis Project would contribute incrementally to a small degree to that impact, which could potentially be substantial from some portions of Corn Springs Road and the Chuckwalla Wilderness. The anticipated operational visual impacts of the Genesis Solar Project in combination with past and foreseeable future projects in the local viewshed of Chuckwalla Valley are thus considered potentially significant from some sensitive viewpoints, particularly within the Chuckwalla Wilderness.

Decommissioning. The decommissioning of the Genesis Solar Energy Project is expected to result in adverse impacts related to visual resources similar to construction impacts. Although decommissioning of the Palen and Genesis projects could conceivably overlap in time, particularly when considering the long period involved in restoration of such disturbed sites in the desert, the cumulative contribution of the Genesis project to these effects from KOP 3 and similar sensitive local cumulative viewpoints is expected to be minor due to distance and moderate anticipated level of contrast. Consequently, the impacts of the decommissioning of the Genesis Solar Energy Project would not be expected to contribute substantially to local cumulative viewshed impacts.

Regional Solar/Renewable Development Projects

Effects of Past and Present Projects

The Genesis Solar Project is among the first of a large number of existing renewable project applications in the southern California desert. As such, past and present projects have had a negligible region-wide cumulative impact.

Effects of Reasonably Foreseeable Future Projects

The analysis of cumulative impacts is not necessarily restricted to the immediate viewshed of a project, and the need for cumulative analysis over a broad geographic area may often be determined by the affected resource itself. In this case the affected resource is the unique and highly valued landscape type of which the project site forms a small part – the landscape of the southern California and Sonoran Desert. The Sonoran Desert and California Desert Conservation Area (CDCA) within which the Genesis Solar Project is located are a unique and highly valued scenic resource of national importance, as reflected by the presence of three national parks and numerous Wilderness Areas within the CDCA boundaries. Cumulative Impacts Table 1 identifies 63 solar projects and 62 wind project applications with a total overall area of over one million acres within the CDCA, which is indicative of the interest in, and potential impact on, public lands for renewable energy generation at a regional level. This figure does not include renewable projects within the Nevada and Arizona portions of the Sonoran and Mojave Deserts. Of the 62 wind applications in the California Desert District, only five of the applications are for wind development; the remaining proposals are for site testing and monitoring. BLM's experience is that a small percentage of applications for site testing have resulted in wind development proposals. In regards to the solar applications filed with BLM in California, only approximately 10 percent of the proponents have prepared acceptable detailed Plans of Development required by BLM to begin a NEPA analysis.

Although it is not likely that all of the future solar and wind development projects proposed in the region would be constructed, it is reasonable to assume that some of them will. With this very high number of renewable energy applications currently filed with BLM, the potential for profound widespread cumulative impacts to scenic resources within the southern California desert is clear. These cumulative impacts could include a substantial decline in the overall number and extent of scenically intact, undisturbed desert landscapes, and a substantially more urbanized character in the overall southern California desert landscape. In particular, the number of current renewable applications before the BLM and Energy Commission that could potentially be prominently visible from the desert region's major highways is proportionally high. Likewise, the cumulative length of potentially affected highways also appears proportionately high. Because these highways are the location from which the vast majority of viewers experience the California desert, this potential effect is of concern to staff. Viewed in the cumulative context of the Southern California desert region as a whole, potential visual impacts of renewable energy projects are thus considered to be cumulatively considerable and potentially significant.

Contribution of the Genesis Solar Energy Project to Cumulative Impacts

Construction. Cumulative construction impacts of renewable projects on a regional basis would be expected to be similar to the cumulative operation impacts, only less extensive, and short-term.

Operation. The cumulative operational impacts renewable projects on a regional landscape basis would be as described above. That is, there is a potential for a regional decline in the overall number and extent of scenically intact, undisturbed desert landscapes, particularly as experienced from the region's major highways and roadways, and thus a more urbanized character in the overall southern California desert landscape. Among the foreseeable renewable applications, the Genesis Project would have a smaller contribution to this effect than many projects because of its limited exposure to views from the highway and middle-ground viewpoints in the adjoining wilderness. Nevertheless, these individually minor effects could be considered cumulatively considerable when viewed together on a regional basis.

Decommissioning. Cumulative regional decommissioning impacts of the Genesis Solar Energy Project together with other foreseeable renewable projects could result in adverse impacts related to visual resources similar to construction and operation impacts. That is, decommissioning impacts of many projects could overlap in time due to the long recovery period required for disturbed desert landscapes. Impacts from disturbed, decommissioned sites could thus become a substantial region-wide cumulative one, though eventual recovery would be anticipated over the long term due to anticipated conditions for decommissioning of the individual projects. In the very long term, potential decommissioning impacts would thus be expected to be mitigated.

Cumulative Impact Conclusion

The anticipated operational visual impacts of the Genesis Solar Project in combination with past and foreseeable future projects in the local viewshed of Chuckwalla Valley are considered potentially significant from some sensitive viewpoints, particularly within the Chuckwalla Wilderness. Anticipated cumulative operational impacts of past and

foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and potentially significant.

C.12.9 COMPLIANCE WITH LORS

VISUAL RESOURCES Table 3

Project Compliance with Laws, Ordinances, Regulations, and Standards (LORS)

LORS		Consistency with Staff-Recommended Conditions of Certification (Project)
FEDERAL		
National Environmental Policy Act (NEPA)	As discussed above, the analysis conducted in this assessment is considered by staff to be consistent with BLM environmental review requirements under NEPA as well as CEQA.	
Federal Land Policy and Management Act of 1976 (FLPMA)	<p>Section 102 (a) of the Federal Land Policy and Management Act of 1976 (FLPMA) states that “. . . . the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values “</p> <p>Section 103 (c) identifies “scenic values” as one of the resources for which public land should be managed.</p> <p>Section 201 (a) states that “The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resources and other values (including ... scenic values)”</p> <p>Section 505 (a) requires that “Each right-of-way shall contain terms and conditions which will... minimize damage to the scenic and esthetic</p>	Refer to CDCA discussion, below.

	values....”	
California Desert Conservation Area Plan (CDCA Plan)	<p>The CDCA Plan represents the Resource Management Plan (RMP) for the area required under FLPMA. The CDCA Plan did not contain VRM mapping as in most RMPs. However, VR Inventory mapping and Interim VRM Classes were assigned to the study area prior to this project by BLM. In staff’s opinion, the analysis in this assessment is consistent with the VRI mapping and IVRM Class mapping previously conducted, although the VRM methodology was not utilized.</p> <p>The Genesis Solar Project site is classified in the CDCA Plan as Multiple-Use Class (MUC) M (Moderate Use). Multiple-Use Class M calls for “a controlled balance between higher intensity use and protection of public lands. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M management is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause.”</p> <p>“The goal of the(CDCA) Plan is to provide for the use of the public lands, and resources of the California Desert Conservation Area, including economic, educational, scientific, and recreational</p>	<p>Consistent. Solar electrical generation plants are specifically allowed for under the MUC Class M Guidelines if NEPA requirements are met.</p> <p>Disclosure of potential visual project effects under NEPA has been conducted through the analysis in this study.</p> <p>In general, BLM considers viewer sensitivity (in the VRM usage of the term) throughout the CDCA as High, due to the primary importance given to scenic values under the main goals of the CDCA Plan. In staff’s opinion, the analysis in this assessment reflects view through a high level of assumed viewer concern within the Energy Commission methodology.</p>

	<p>uses, in a manner which enhances wherever possible—and which does not diminish, on balance—the environmental, cultural, and <i>aesthetic</i> values of the Desert and its productivity.”</p> <p>Under the CDCA Plan Electrical Power Generation Facilities, including Wind/Solar facilities, may be allowed within MUC Class M if NEPA requirements are met.</p>	
STATE		
State Scenic Highway Program (CA. Streets and Highways Code, Section 260 et seq.)	The State Scenic Highway Program promotes protection of designated State scenic highways through certification and adoption of local scenic corridor protection programs that conform with requirements of the State program.	Consistent. Highway I-10 within the project viewshed is not an eligible or designated State scenic highway. To become eligible would require listing by act of the state legislature. Eligibility is a pre-requisite to state designation.
LOCAL		
<p>Riverside County General Plan (2003)</p> <p>Related Multipurpose Open Space Element</p>	<p>Multipurpose Open Space Element</p> <p>Scenic Resources</p> <p>Policies:</p> <p>OS 21.1 Identify and conserve the skylines, view corridors, and outstanding scenic vistas within Riverside County. (AI 79)</p> <p>Scenic Corridors</p> <p>Policies:</p> <p>OS 22.1 Design developments within designated scenic highway corridors to balance the objectives of maintaining scenic resources with accommodating compatible</p>	<p>The project is located entirely on BLM lands and is thus not subject to County General Plan jurisdiction. The following related policies are provided for background purposes:</p> <p>The County has not yet mapped or listed specific view corridors or vistas for protection.</p> <p>I-10 is identified as a County eligible scenic corridor in the General Plan Circulation Element (Figure C-9). However, there are no designated state or county scenic highways within the project viewshed.</p>

	land uses. (AI 3)	
	OS 22.2 Study potential scenic highway corridors for possible inclusion in the Caltrans Scenic Highways Plan.	As stated above, state designation requires listing of a road segment as an eligible State Scenic Highway by an act of the state legislature (California Streets and Highways Code, Division 1, Chapter 2, Article 2.5, Section 261).
	OS 22.3 Encourage joint efforts among federal, state, and County agencies, and citizen groups to ensure compatible development within scenic corridors	Again, there are no designated scenic corridors within the project viewshed.

C.12.10 NOTEWORTHY PUBLIC BENEFITS

No noteworthy public benefits in the area of visual resources were identified.

C.12.11 CONCLUSIONS

Staff have analyzed visual resource-related information pertaining to the proposed Genesis Solar Project and conclude that the proposed project, with all staff-recommended conditions of certification, would have adverse but less-than-significant visual impacts.

Impacts of the Reduced Acreage Alternative, with staff-recommended conditions of certification, would also have less-than-significant visual impacts. However, the degree and extent of those impacts would be substantially less than those of the Proposed Project.

Impacts of the Dry Cooling Alternative, with staff-recommended conditions of certification, would be substantially similar to the Proposed Project and would also have less-than-significant visual impacts. The Dry Cooling Alternative could be somewhat superior to the Proposed Project due to a lower incidence of visible vapor plumes.

The anticipated visual impacts of the Proposed Project, Reduced Acreage, and Dry Cooling Alternatives, in combination with past and foreseeable future local projects in the Chuckwalla Valley, and past and foreseeable future region-wide projects in the southern California desert are considered cumulatively considerable and potentially significant.

All action alternatives studied, with staff-recommended conditions of certification, would conform with all applicable Laws, Ordinances, Regulations and Standards (LORS).

C.12.12 MITIGATION MEASURES/PROPOSED CONDITIONS OF CERTIFICATION/APPROVAL

SURFACE TREATMENT OF NON-MIRROR PROJECT STRUCTURES AND BUILDINGS

VIS-1 The project owner shall treat all non-mirror surfaces of all project structures and buildings visible to the public such that a) their colors minimize visual intrusion and contrast by blending with the existing dark brown color of the background bajadas and mountain slopes as seen from the highway or, in the case of foreground transmission poles, the lighter tan color of the valley floor; b) their colors and finishes do not create excessive glare; and c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive. This measure shall include coloring of security fencing with vinyl or other non-reflective coating; or with slats or similar semi-opaque, non-reflective material, to blend to the greatest feasible extent with the background soil.

The project owner shall submit for CPM and BLM Authorized Officer review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan shall include:

- A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes;
- B. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and number; or according to a universal designation system;
- C. One set of color brochures or color chips showing each proposed color and finish;
- D. A specific schedule for completion of the treatment; and
- E. A procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by BLM's Authorized Officer and the CPM. Subsequent modifications to the treatment plan are prohibited without BLM's Authorized Officer and CPM approval.

Verification: At least 90 days prior to specifying to the vendor the colors and finishes of the first structures or buildings that are surface treated during manufacture,

the project owner shall submit the proposed treatment plan to BLM's Authorized Officer and the CPM for review and approval and simultaneously to San Bernardino County for review and comment. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a plan with the specified revision(s) for review and approval by BLM's Authorized Officer and the CPM before any treatment is applied. Any modifications to the treatment plan must be submitted to BLM's Authorized Officer and the CPM for review and approval.

Prior to the start of commercial operation, the project owner shall notify BLM's Authorized Officer and the CPM that surface treatment of all listed structures and buildings has been completed and they are ready for inspection and shall submit to each one set of electronic color photographs from the same key observation points identified in (d) above. The project owner shall provide a status report regarding surface treatment maintenance in the Annual Compliance Report. The report shall specify a): the condition of the surfaces of all structures and buildings at the end of the reporting year; b) maintenance activities that occurred during the reporting year; and c) the schedule of maintenance activities for the next year.

TEMPORARY AND PERMANENT EXTERIOR LIGHTING

VIS-2 To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; b) lighting does not cause excessive reflected glare; c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting; d) illumination of the project and its immediate vicinity is minimized, and e) the plan complies with local policies and ordinances. The project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan that includes the following:

- A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;
- B. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;
- C. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;
- D. Light fixtures that are visible from beyond the project boundary shall have cutoff angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;
- E. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and

- F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied. To the greatest feasible extent, project lighting shall be used on an 'as needed' basis and turned off at other times.

Verification: At least 90 days prior to ordering any permanent exterior lighting or temporary construction lighting, the project owner shall contact BLM's Authorized Officer and the CPM to discuss the documentation required in the lighting mitigation plan. At least 60 days prior to ordering any permanent exterior lighting, the project owner shall submit to BLM's Authorized Officer and the CPM for review and approval and simultaneously to the County of San Bernardino for review and comment a lighting mitigation plan. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM.

The project owner shall not order any exterior lighting until receiving BLM Authorized Officer and CPM approval of the lighting mitigation plan.

Prior to commercial operation, the project owner shall notify BLM's Authorized Officer and the CPM that the lighting has been completed and is ready for inspection. If after inspection, BLM's Authorized Officer and the CPM notify the project owner that modifications to the lighting are needed, within 30 days of receiving that notification the project owner shall implement the modifications and notify BLM's Authorized Officer and the CPM that the modifications have been completed and are ready for inspection.

Within 48 hours of receiving a lighting complaint, the project owner shall provide BLM's Authorized Officer and the CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify BLM's Authorized Officer and the CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to BLM's Authorized Officer and the CPM within 30 days.

RE-ALIGNMENT AND VISUAL MITIGATION OF PROPOSED TRANSMISSION INTERCONNECTION

VIS-3 To reduce the prominence of the proposed new segment of transmission line paralleling Highway I-10, the applicant shall set back the transmission line at least 1/2 mile from Highway I-10. In addition, to reduce contrast and prominence of the transmission line, lattice-style transmission towers shall be utilized, and painted in non-reflective natural tones to blend with the visual background. Re-alignment of the transmission line shall be consistent with any cultural or biological constraints identified in those portions of this Staff Assessment/DEIS. In the event of conflict, cultural or biological constraints shall prevail.

Verification: At least 90 days prior to start of construction, the project owner shall present to BLM's Authorized Officer and the CPM a revised plan depicting how the proposed transmission line will be set back from the highway, and depicting scaled

architectural elevations of lattice transmission towers to be used. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM.

The project owner shall not begin construction until receiving BLM Authorized Officer and CPM approval of the revised plan.

REFLECTIVE GLARE MITIGATION

VIS-4 In order to reduce brightness of spread reflections of the sun to off-site viewers, the perimeter chain link fencing proposed by Applicant shall include opaque privacy slats of a minimum 10 feet in height. The slats shall be of a dark tan or earth-tone color selected to blend with the visual background of the site.

Verification: At least 90 days prior to start of construction, the project owner shall present to BLM's Authorized Officer and the CPM a glare mitigation plan describing the fencing measures and materials proposed for mitigating off-site glare. The plan shall include color samples of slatted fencing proposed for use. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM.

The project owner shall not begin construction until receiving BLM Authorized Officer and CPM approval of the revised plan.

Within 48 hours of receiving a glare complaint, the project owner shall provide the BLM Authorized Officer and CPM with a complaint resolution form report as specified in the Compliance General Conditions including a proposal to resolve the complaint, and a schedule for implementation. The project owner shall notify the BLM Authorized Officer and CPM within 48 hours after completing implementation of the proposal. A copy of the complaint resolution form report shall be submitted to the BLM Authorized Officer and CPM within 30 days

VISUAL MITIGATION AND RE-VEGETATION OF STAGING AREA

VIS-5 In order to minimize the visual prominence of the proposed staging area to visitors at Wiley's Well Rest Area on I-10, the project owner shall provide a revised site plan for staging that includes screening of the proposed laydown area with earth berms, opaque fencing, and/or other measures to minimize visibility from within the main rest area, and restoration and revegetation of the laydown area after completion of construction. The revised staging plan shall be consistent with any cultural or biological resource constraints identified elsewhere in this Staff Assessment/DEIS. Restoration shall include re-grading to original contours in order to appear natural and undisturbed; revegetation shall employ appropriate locally native species only, again in accordance with conditions identified in the cultural and biological resource analyses of this report. The project owner shall provide a re-vegetation plan describing how the staging site will be restored following construction. The

plan shall call for beginning of restoration of the site within the shortest feasible time following completion of construction.

Verification: At least 90 days prior to start of construction, the project owner shall present to BLM's Authorized Officer and the CPM a revised staging area site plan. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM. The project owner shall not begin construction until receiving BLM Authorized Officer and CPM approval of the revised plan.

At least 60 days prior to start of operation, the project owner shall present to BLM's Authorized Officer and the CPM a revegetation plan for the staging area. If BLM's Authorized Officer and the CPM determine that the plan requires revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CPM. The project owner shall not begin operation until receiving BLM Authorized Officer and CPM approval of the revised plan.

REDUCTION OF FORM, LINE, AND TEXTURE CONTRAST

VIS-6 To the extent possible, the project owner will use applicable design principles to reduce the visual contrast of the project with the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see VIS-1) and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals will be based on the following factors:

Earthwork: Select locations and alignments that fit into the landforms to minimize the size of cuts and fills. Avoid hauling in or hauling out of excess earth cut or fill. Avoid rounding and/or warping slopes. Retain existing rock formations, vegetation, and drainage. Tone down freshly broken rock faces with emulsions or stains. Use retaining walls to reduce the amount and extent of earthwork. Retain existing vegetation by using retaining walls or fill slopes, reducing surface disturbance, and protecting roots from damage during excavations. Avoid soil types that generate strong color contrasts. Reduce dumping or sloughing of excess earth and rock on downhill slopes.

Vegetation Manipulation: Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.

Structures: Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural land forms and vegetation. Reduce the line contrast created by straight edges.

Linear Alignments: Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts and bisecting ridge tops. Hug vegetation lines and avoid open areas such as valley bottoms. Cross highway corridors at less sharp angles.

Reclamation and Restoration: Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Replace soil, brush, rocks, and natural debris over disturbed area. Newly introduced plant species should be of a form, color, and texture that blends with the landscape.

Verification: As early as possible in the site and facility design, the project owner shall meet with BLM's Authorized Office and the CPM to discuss incorporation of these above factors into the design plans. At least 90 days prior to final site and facility design, the project owner shall contact BLM's Authorized Officer and the CPM to review the incorporation of the above factors into the final facility and site design plans. If BLM's Authorized Officer and the CPM determine that the site and facility plans require revision, the project owner shall provide to BLM's Authorized Officer and the CPM a revised plan for review and approval by BLM's Authorized Officer and the CP.

C.12.13 REFERENCES

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APPENDIX VR-1

STAFF'S VISUAL RESOURCES EVALUATION METHODOLOGY

Staff evaluates the visual characteristics of the existing physical setting, the proposed project, the circumstances affecting the viewer, and the degree of visual change that a proposed project may introduce using the elements generally accepted criteria for determining substantial environment impact significance identified below.

ELEMENTS OF THE METHODOLOGY

Key Observation Points

Staff evaluates the existing visible physical environmental setting from a fixed vantage point, called a *key observation point* (KOP) that provides a view of the visual change introduced by the proposed project to the view from that KOP. The view as seen from the KOP is referred to as the *viewshed*. Staff uses a KOP¹ to represent a location(s) from which to conduct detailed analyses of the proposed project and to obtain existing condition photographs and prepare photo simulations. KOPs are selected to be representative of the most critical viewshed locations from which the project would be seen. Because it is not feasible to analyze all the views in which a proposed project would be seen, it is necessary to select a KOP that would most clearly display the visual effects of the proposed project. A KOP may also represent primary viewer groups that would potentially be affected by the project. In addition to KOP photo(s), staff reviews landscape character photos that help provide a visual overview of a project site, its vicinity, and the selected KOP area, as appropriate. Prior to application submittal, staff participates in the selection of appropriate KOP(s) for the analysis.

LORS Consistency

Energy Commission staff considers federal, state, and local laws, ordinances, regulations, and standards (LORS) relevant to aesthetics or protection and preservation of visual sensitive resources. Conflicts with such LORS can constitute significant visual impacts. For example, visual staff examines land use planning documents, such as a local government's General Plan, Specific Plan, and zoning ordinances applicable to the project site and surrounding area to gain insight as to the type of land uses intended for the area, and the guidelines given for aesthetics, or protection and preservation of visual sensitive resources.

California Environmental Quality Act Guidelines

The CEQA Guidelines define a "significant effect on the environment" to mean a "substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance" (California Code of Regulations, Title 14, section 15382).

¹The use of KOPs or similar view locations is common in visual resource analysis. The U.S. Bureau of Land Management (USDI BLM 1986a, 1986b, 1984) and the U.S. Forest Service (USDA Forest Service 1995) use such an approach.

Appendix G Environmental Checklist Form of the CEQA Guidelines, under “Aesthetics,” lists the following four questions to be addressed regarding whether the potential impacts of a project are significant:

- A. Would the project have a substantial adverse effect on a scenic vista?
- B. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- C. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
- D. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Staff answers each of the four checklist questions for the proposed project, including any related facility such as a transmission line or gas pipeline, for both construction and operation phases.

Visible Water Vapor Plume Frequency

When a proposed power plant is operated at times of low temperature and high humidity, the potential exists for the exhaust from its cooling towers to condense and water vapor plumes (steam plume). The formed plume potentially could have an adverse effect on visual sensitive resources in the vicinity of the project.

The severity of the visual impacts created by a project’s visible plumes depends on five factors: 1) the frequency of the plumes, 2) the physical size of the plumes (dimensions), 3) the sensitivity of the viewers who would see the plumes, 4) the distance between the plumes and the viewers, 5) the visual quality of the existing viewshed; and, 6) whether a scenic resource or vista would be blocked by the plumes.

Staff completes water vapor plume modeling of the proposed project’s cooling towers using design parameters provided by the applicant. Staff models the estimated plume frequency and dimensions for the cooling tower and turbine exhaust using the Combustion Stack Visible Plume (CSVP) model, and a multi-year meteorological data set obtained for the area where the project is proposed.

Staff uses the modeling results to determine the plume dimensions on which to base its visual impact analysis. The 20th percentile plume is the smallest of the plumes that are predicted to occur zero to 20% of the time. Eighty (80) percent of the time the dimensions of the clear hour plumes would be smaller than the 20th percentile plume dimensions. A one percentile clear hour plume would be extremely large, very noticeable to a wide area, but would occur very infrequently.

Staff focuses its frequency of the plumes analysis on the portion of the year when the ambient conditions (i.e., cool/cold temperatures and high relative humidity) are such that plumes are most likely to occur (typically from November through April) and when “clear” sky conditions exist because this is when the plumes would cause the most visual contrast with the sky and have the greatest potential to cause adverse visual impacts. Staff eliminates from consideration plumes that occur at night or during rain or

fog conditions because plume visibility, and overall visual quality, is typically low during those conditions. In addition, plumes that occur during specific cloudy conditions are also eliminated because under these conditions, plumes have less contrast with the background sky. A plume frequency of 20% of seasonal daylight no rain/fog high visual contrast (i.e. "clear") hours is used to determine potential plume impact significance. If it is determined that the seasonal daylight clear hour plume frequency is greater than 20%, then plume dimensions are determined and a significance analysis is included in the Visual Resources section of the Staff Assessment for the proposed project.

Plume frequencies of less than 20% have been determined to generally have a less than significant impact. If the modeling predicts seasonal daylight clear plume frequencies greater than 20%, staff calculates the dimensions of the clear hour plumes and then conduct an assessment of the visual change (in terms of contrast, dominance and view blockage) that would be caused by the 20th percentile plume dimensions. Staff also analyzes the predicted plume's potential luminescence (light refraction resulting in a glare or glow) and color contrast, and opacity (the degree to which light is prevented from passing through an emission plume) that may be introduced to the KOP view sheds. Considering the visual sensitivity of the existing landscape and viewing characteristics, the degree of visual change caused by the plumes may result in a significant visual impact.

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Appendix VR-2: Visible Plume Modeling Analysis

William Walters

INTRODUCTION

The following provides the assessment of the Genesis Solar Project (Genesis) cooling tower exhaust stack visible plumes. Staff completed a modeling analysis for the applicant's proposed unabated cooling tower design.

PROJECT DESCRIPTION

The proposed project is a thermal solar design that requires cooling to condense the steam that is recycled. The applicant has proposed two seven-cell mechanical-draft cooling towers for project cooling. The applicant has not proposed to use any methods to abate visible plumes from the cooling towers.

The applicant has also proposed two small (30 MMBtu/hr) boilers that will be used for daily start-up and for freeze protection. Each of these boilers will be operated for a maximum of 14 hours per day, and 1,000 hours per year. During cold weather periods, such as their use during start-up and for freeze protection in winter these boilers are likely to have visible plumes. However, due to their very small size the boiler plumes are not believed to create a potentially significant visual impact and are not assessed further in this analysis.

VISIBLE PLUME MODELING METHODS

PLUME FREQUENCY AND DIMENSION MODELING

The Combustion Stack Visible Plume (CSVP) model was used to estimate plume frequency and plume dimensions for the cooling tower exhaust. This model provides conservative estimates of both plume frequency and plume size. This model uses hourly cooling tower exhaust parameters and hourly ambient condition data to determine the plume frequency. This model is based on the algorithms of the Industrial Source Complex model (Version 2), that determine temperatures at the plume centerline, but this model does not incorporate building downwash.

The modeling method combines the cooling tower cell exhausts into an equivalent single stack. This method may overestimate cooling tower plume size (particularly height) during plume hours with higher winds perpendicular to the length of the tower due to little cell interaction and the potential for building downwash, but will be more accurate during low wind and calm periods when the exhausts from the cooling tower cells will combine into one coherent body. Wind speeds are set to 1 m/s during calm hours in the modeling analysis.

CLOUD COVER DATA ANALYSIS METHOD

A plume frequency of 20 percent of seasonal (November through April) daylight high visual contrast (i.e. “clear”) hours is used to determine potential plume impact significance. The methodology used to determine high visual contrast hours is provided below:

The Energy Commission has identified a “clear” sky category during which visible plumes have the greatest potential to cause adverse visual impacts. For this project the meteorological data set² used in the analysis categorizes sky cover in 10 percent increments. Staff has included in the “Clear” category a) all hours with sky cover equal to or less than 10 percent plus b) half of the hours with total sky cover 20-90 percent. The rationale for including these two components in this category is as follows: a) visible plumes typically contrast most with sky under clear conditions and, when total sky cover is equal to or less than 10 percent, clouds either do not exist or they make up such a small proportion of the sky that conditions appear to be virtually clear; and b) for a substantial portion of the time when total sky cover is 20-90 percent the opacity of sky cover is relatively low (equal to or less than 50 percent), so this sky cover does not always substantially reduce contrast with visible plumes; staff has estimated that approximately half of the hours meeting the latter sky cover criteria can be considered high visual contrast hours and are included in the “clear” sky definition.

If it is determined that the seasonal daylight clear hour plume frequency is greater than 20 percent then plume dimensions are calculated, and a significance analysis of the plumes is included in the Visual Resources section of the Staff Assessment.

COOLING TOWER VISIBLE PLUME MODELING ANALYSIS

COOLING TOWER DESIGN AND OPERATING PARAMETERS

The cooling tower design characteristics were determined through a review of the applicant’s AFC (Genesis 2009a), the air quality and visible plume modeling files (Darvin 2010a), and additional data provided by the applicant to estimate daily and seasonal cooling tower operations (Tetra Tech 2010a, Worley Parsons 2010a). The applicant’s cooling tower physical design parameters are presented in **Visible Plume Table 1**.

² This analysis uses meteorological data provided by the applicant. Three years of meteorological data (1989-1991) are collected from the Blythe monitoring station.

Visible Plume Table 1
Cooling Tower Physical Design Parameters

Parameter	Cooling Tower Design Parameters
Number of Cells per Tower	7 Cells (Linear Design)
Cell Height	45.3 feet (13.81 meters)
Cell Stack Diameter	31.6 feet (9.64 meters)
Tower Housing Length	294.7 feet (89.8 meters)
Tower Housing Width	42.7 feet (13.01 meters)

Source: GSEP 2010a

The applicant provided estimated average heat load data for each hour of each month (Tetra Tech 2010a), as shown in **Visible Plume Table 2**. All hours not shown in this table are assumed to have zero cooling load. The applicant provided assumptions on the numbers of cells in operation based on percentage of full heat load (Worley Parsons 2010a). Using this data staff estimated the number of cells in operation for each hour of each month, as shown in **Visible Plume Table 3**.

Visible Plume Table 2
Cooling Tower Average Heat Load per Hour for Each Month

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7:00	---	---	---	23%	49%	59%	37%	22%	---	---	---	---
8:00	---	---	44%	68%	88%	97%	80%	70%	62%	44%	20%	---
9:00	26%	38%	79%	87%	91%	97%	86%	81%	86%	71%	50%	26%
10:00	45%	52%	79%	88%	94%	96%	85%	86%	88%	72%	53%	44%
11:00	46%	49%	79%	88%	91%	96%	93%	85%	87%	70%	52%	44%
12:00	47%	45%	77%	89%	92%	65%	92%	83%	86%	69%	50%	41%
13:00	49%	42%	76%	92%	92%	96%	87%	87%	83%	73%	53%	44%
14:00	52%	47%	80%	92%	91%	97%	90%	88%	83%	79%	57%	50%
15:00	58%	55%	76%	81%	90%	96%	88%	88%	81%	79%	60%	56%
16:00	54%	66%	74%	79%	89%	94%	90%	87%	82%	72%	41%	46%
17:00	---	30%	60%	67%	79%	85%	82%	74%	61%	18%	---	---
18:00	---	---	---	---	34%	54%	49%	30%	15%	---	---	---

Source: Tetra Tech 2010a

Visible Plume Table 3
Number of Operating Cooling Tower Cells

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
7:00				3	5	6	5	3				
8:00			5	6	7	7	7	6	6	5	3	
9:00	4	5	7	7	7	7	7	7	7	7	5	4
10:00	5	6	7	7	7	7	7	7	7	7	6	5
11:00	5	5	7	7	7	7	7	7	7	7	6	5
12:00	5	5	7	7	7	6	7	7	7	6	5	5
13:00	5	5	7	7	7	7	7	7	7	7	6	5
14:00	6	5	7	7	7	7	7	7	7	7	6	5
15:00	6	6	7	7	7	7	7	7	7	7	6	6
16:00	6	6	7	7	7	7	7	7	7	7	5	5
17:00		4	6	6	7	7	7	7	6	3		
18:00					4	6	5	4	2			

Source: Staff Interpolation based on cooling tower average heat load per hour of each month (Tetra Tech 2010a) and the number of cells in operation corresponding to the percentage of heat load, provided by the applicant (Worley Parsons 2010a).

The cooling tower operation for this project is significantly different than the dozens of cooling towers evaluated for siting cases from 2001 to present. Specifically, the heat rejection load to the cooling tower is specifically related to the sun angle (time of day and year) that impacts the total power production capacity of the facility. Therefore, the cooling tower operation starts at low heat rejection loads each morning and building until the afternoon when the heat rejection load drops as the sun sets. Staff has attempted to mimic, in a simple and conservative way, the complex operating profile of the cooling tower exhaust modeling inputs. Additionally, the hourly cooling tower exhaust conditions are interpolated for the hourly ambient conditions (temperature and relative humidity) based on the assumed heat rejection for each operating cooling tower cell.

COOLING TOWER VISIBLE PLUME MODELING RESULTS

Visible Plume Table 5 provides the CSVP model visible plume frequency results for daytime operations using a three-year (1989 to 1991) meteorological data set compiled from the Blythe monitoring station.

Visible Plume Table 5
Predicted Hours with Cooling Tower Visible Plumes
Blythe 1989-1991 Meteorological Data

Case	Available (hr)	Plume (hr)	Percent
All Hours	26,280	1,189	4.52%
Daylight Hours	13,425	903	6.73%
Daylight No Rain No Fog	13,260	848	6.39%
Seasonal Daylight No Rain No Fog*	5,967	689	11.50%
Seasonal Daylight Clear*	4,145	395	10.75%

*Seasonal conditions occur during November through April.

The results noted above are based on the data and assumptions shown in **Visible Plume Tables 2** through **4**, and do not include night time operation as the heat load for the cooling tower is a function of the solar radiation.

A visible plume frequency of 20 percent of seasonal (November through April) daylight clear hours is used as a plume impact study threshold trigger, therefore plume dimension modeling and additional impact analysis for the cooling tower visible plumes is not required for this project.

APPLICANT'S PLUME ANALYSIS

The applicant prepared a plume modeling analysis using the Seasonal/Annual Cooling Tower Impact (SACTI) model. Due to the way the SACTI model over simplifies the modeling by only allowing one operating case to be modeled at a time and its grouping of the hourly meteorological data into a couple dozen cases, among a few other significant issues, staff does not use this model for plume frequency and size prediction.

Staff did not find any significant issues with the applicant's SACTI model inputs (Darvin 2010a). However, the applicant's SACTI modeling analysis conservatively assumed high heat rejection and cooling tower cell use for all hours, which would over predict cooling tower plume frequency and size. Therefore, staff has not compared the applicant's plume modeling results with staff's CSVP plume modeling results.

GROUND FOGGING ANALYSIS

Staff also reviewed the applicant's ground fogging modeling results, which is part of the output from the applicant's SACTI modeling analysis. Using very conservative operating assumptions, ground fogging was predicted to occur less than two hours during the three years of meteorological data modeled, and only extend 300 meters from the cooling tower. This is a very low frequency for ground fogging potential and there are no public roads that could be impacted with these ground fogging plumes. Therefore, the proposed project cooling towers would not cause ground traffic safety impacts on public roads.

CONCLUSIONS

Visible water vapor plumes from the proposed Genesis Solar cooling tower would not occur more than 20 percent of seasonal daylight clear hours. Therefore plume dimension modeling and additional impact analysis for the cooling tower visible plumes is not required for this project.

The ground fogging plume analysis indicates that the cooling tower will only create minimal hours of the ground fogging plume that would not impact any public roads. Therefore, there would be no impact on ground traffic safety.

Due to their small size and limited operation significant visible water vapor plumes are not expected from the two small Genesis auxiliary boilers.

REFERENCES

Darvin 2010a – Gregory Darvin, Atmospheric Dynamics, Inc. SACTI Modeling Files e-mailed to William Walters, Aspen Environmental Group. January 13, 2010.

Genesis 2009a – Genesis Solar LLC/R. O’Keefe (tn 53083). Application for Certification Vol 1& 2. Submitted to CEC/Docket Unit on 08/31/09.

Tetra Tech 2010a – Tetra Tech EC, INC./T. Bernhardt (tn 54729). Data Request Responses to Set 1B, dated 01/11/10.

Worley Parsons 2010a – Worley Parsons/Jared Foster. Supplemental Data Response to Data Requests Set 1B. Submitted January 20, 2010.

VISUAL RESOURCES - FIGURE 1

Genesis Solar Energy Project - Panoramic View of Site (Looking North from Ford Dry Lake Road Interchange)

MARCH 2010



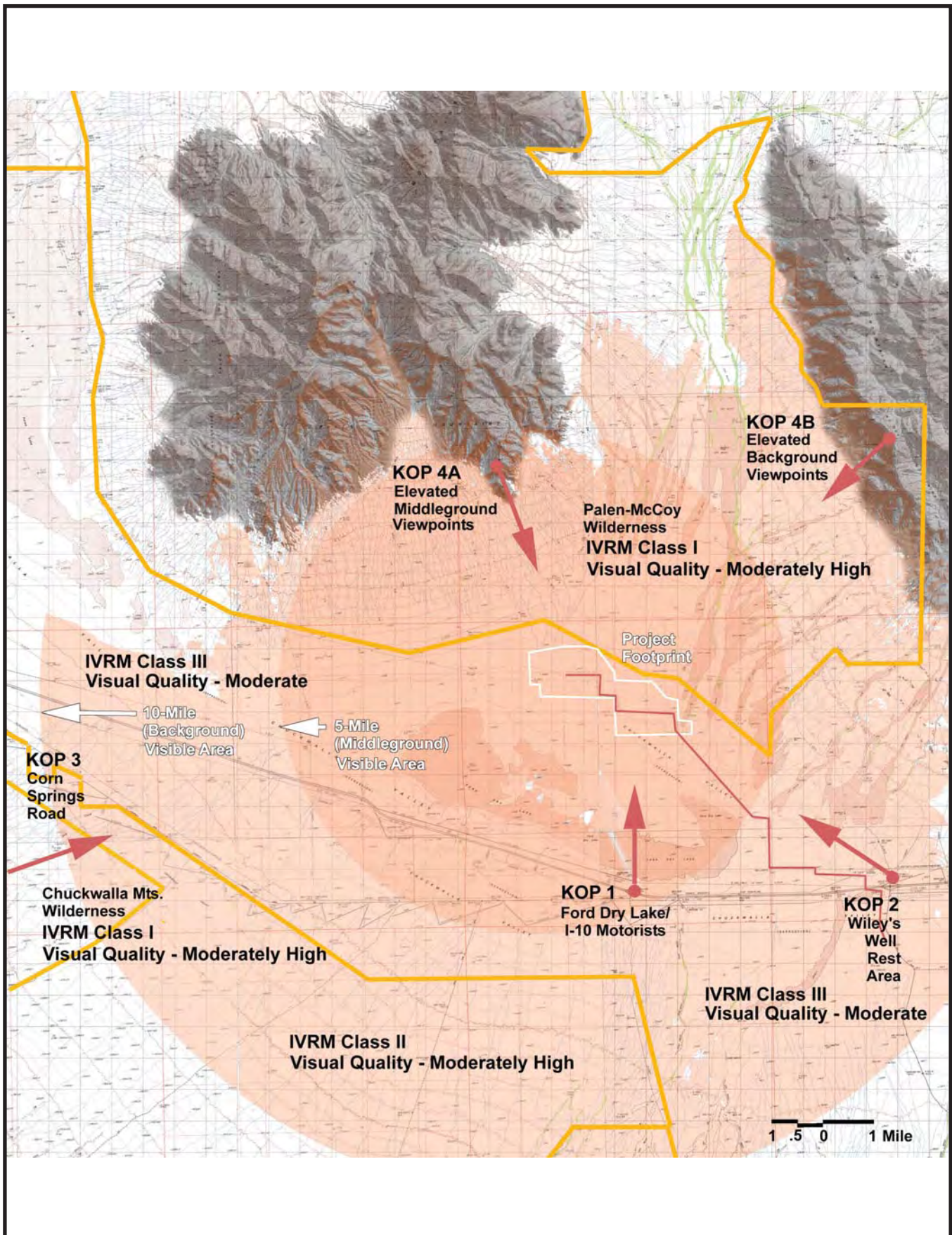
VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: William Kanemoto

VISUAL RESOURCES - FIGURE 2

Genesis Solar Energy Project - Existing Landscape Setting, Project Viewshed, and Key Observation Points (KOPs)



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: William Kanemoto

MARCH 2010

VISUAL RESOURCES

MARCH 2010

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VISUAL RESOURCES - FIGURE 3
Genesis Solar Energy Project - Visual Setting Photos



Dry Lake Bed



Ironwood Tree



Creosote Scrub



Chuckwalla and Ironwood Prisons, Looking South from Wiley's Well Road, I-10

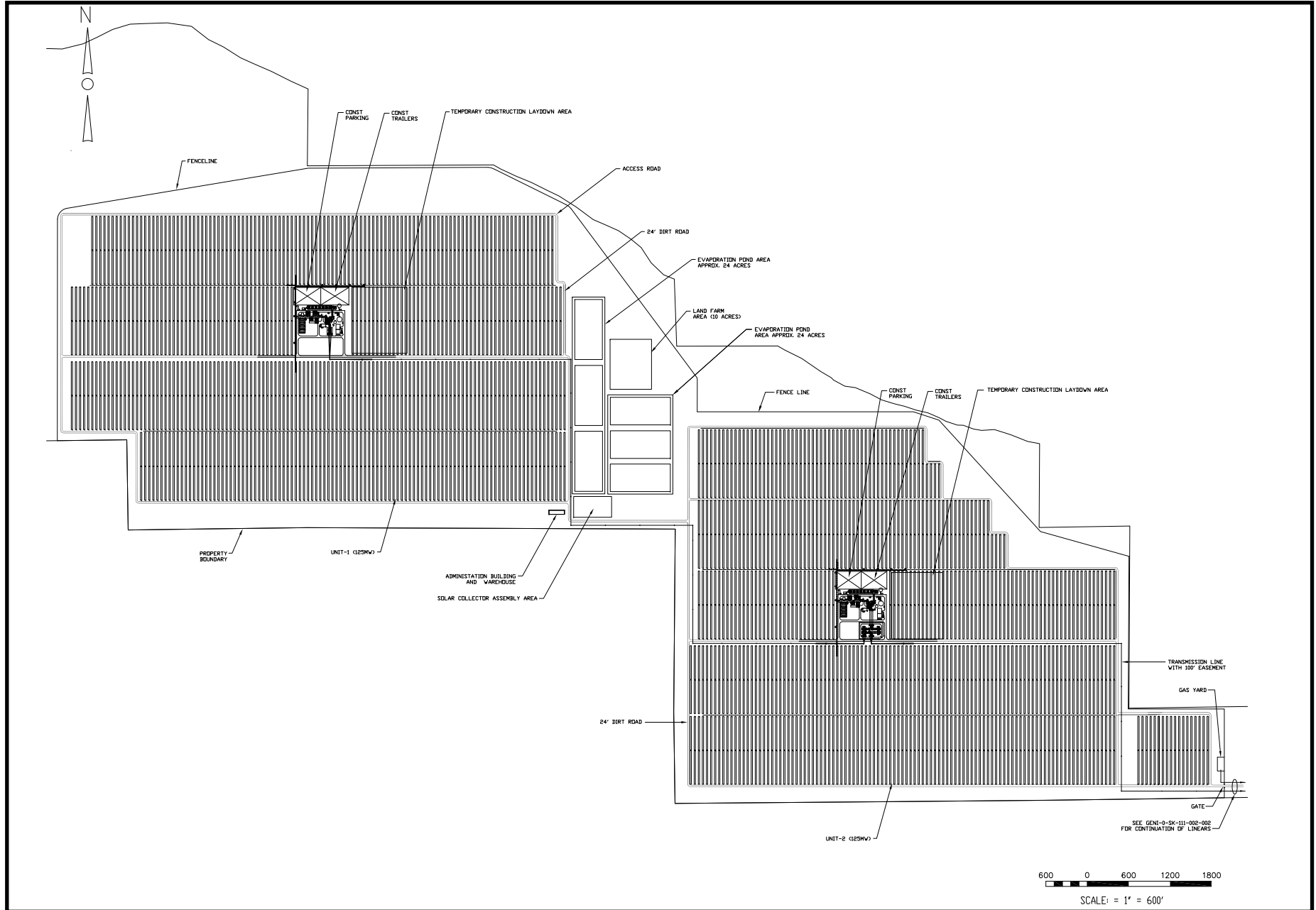


Devers-Palo Verde Transmission Line, Looking Southwest from Wiley's Well Road

VISUAL RESOURCES - FIGURE 4 **Genesis Solar Energy Project - Project Layout**

MARCH 2010

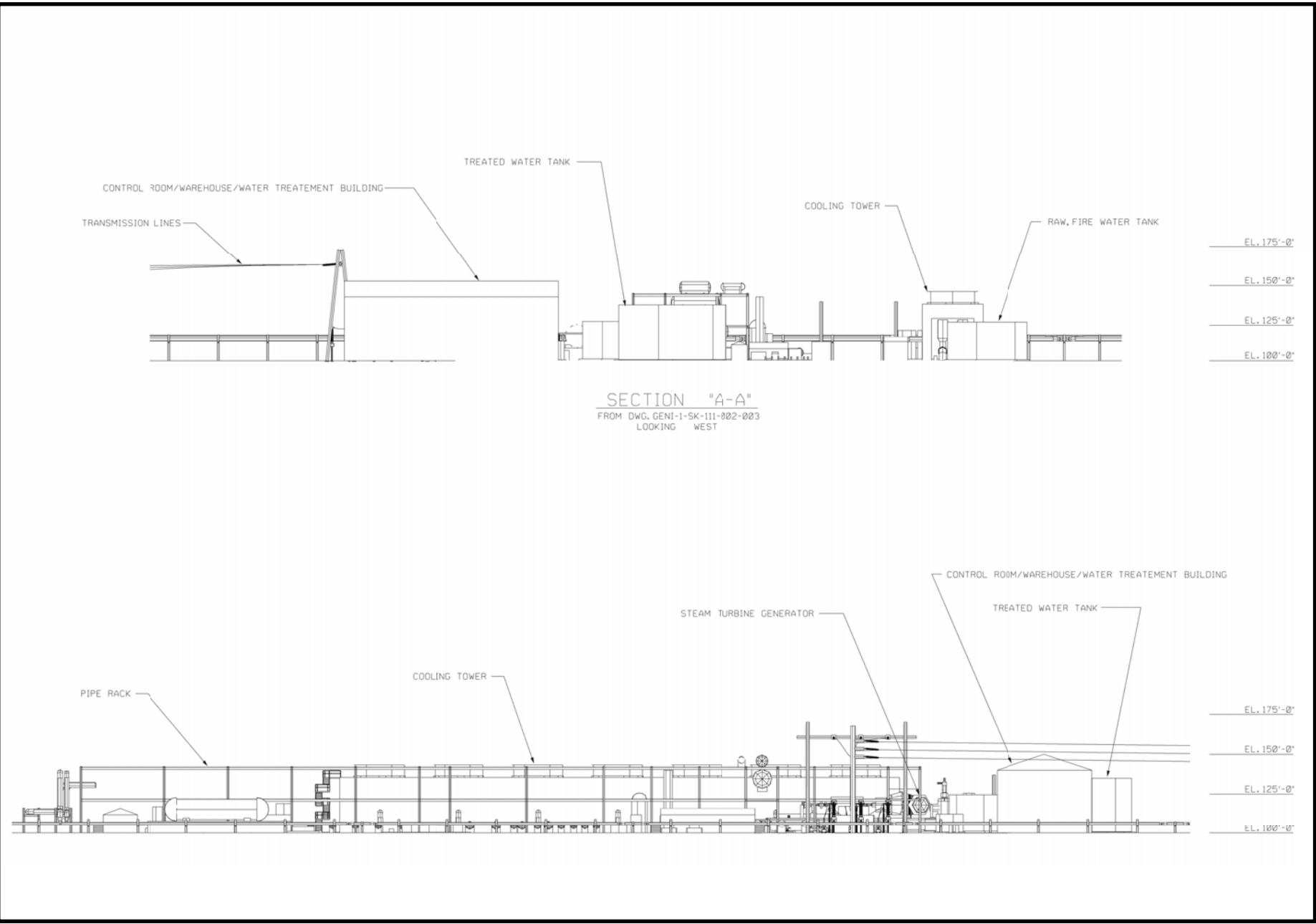
VISUAL RESOURCES



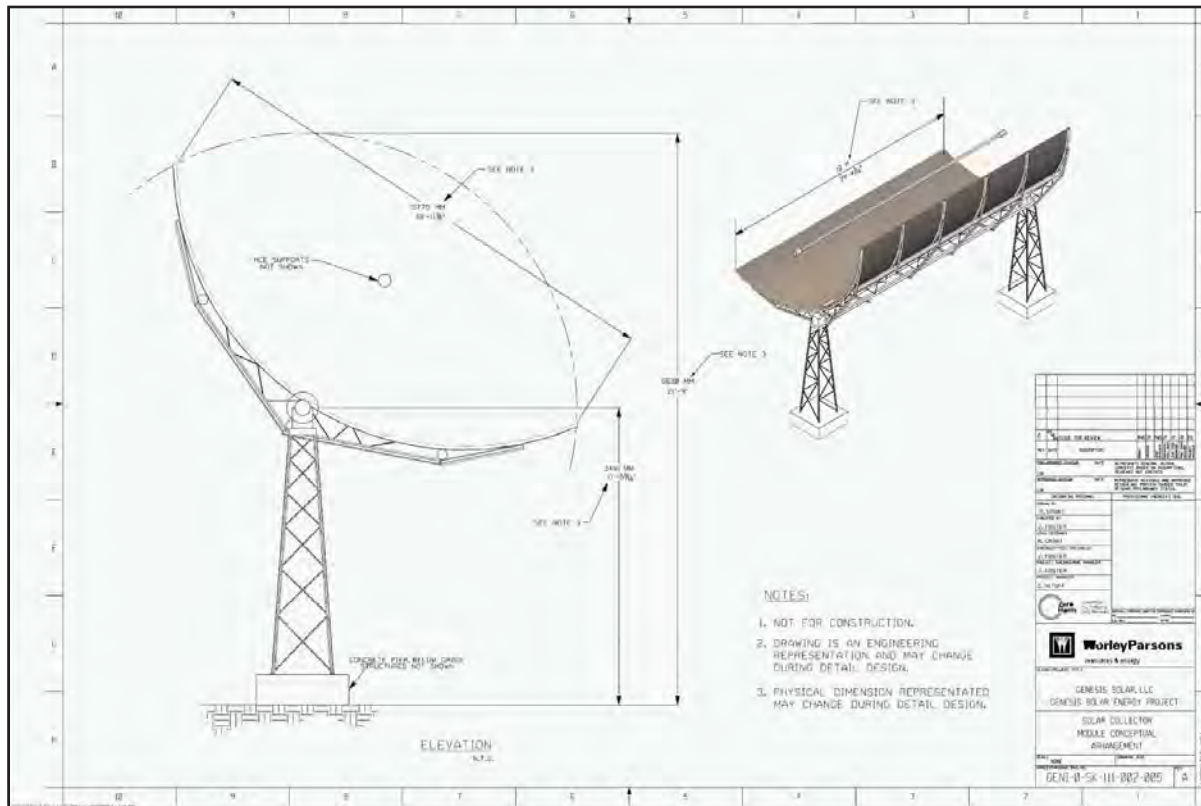
VISUAL RESOURCES - FIGURE 5 **Genesis Solar Energy Project - Project Structure Elevations**

MARCH 2010

VISUAL RESOURCES



VISUAL RESOURCES - FIGURE 6
Genesis Solar Energy Project - Project Solar Collector Mirror Units

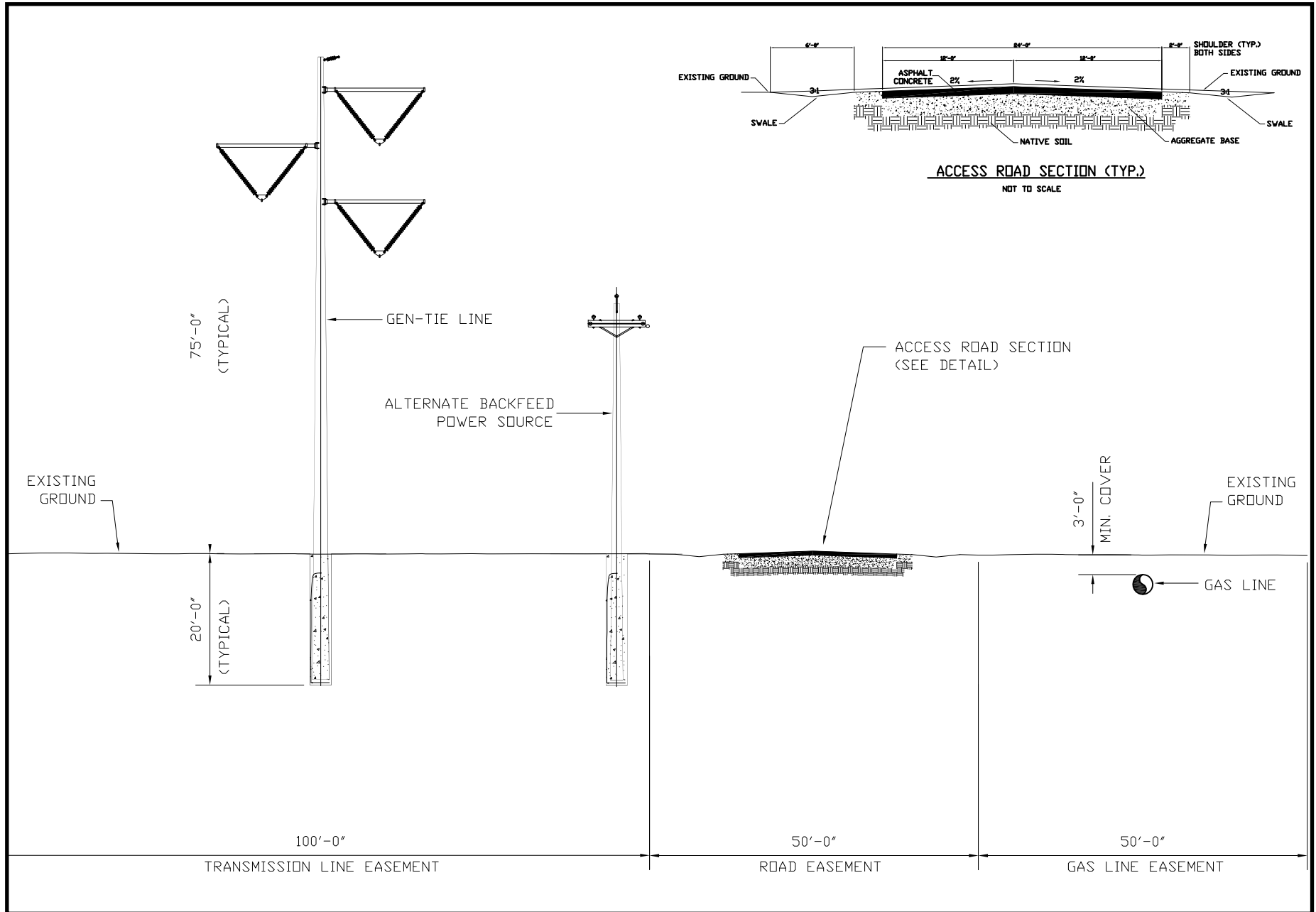


CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010
SOURCE: William Kanemoto

MARCH 2010

VISUAL RESOURCES

VISUAL RESOURCES - FIGURE 7
Genesis Solar Energy Project - Gen-Tie Transmission Line Pole Elevations



VISUAL RESOURCES - FIGURE 8A

Genesis Solar Energy Project - Existing Visual Conditions at KOP 1 (Ford Dry Lake Bridge over I-10)

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: AFC 5.10-15A

VISUAL RESOURCES - FIGURE 8B

Genesis Solar Energy Project - Visual Simulation of Phase 2 at KOP 1 (Ford Dry Lake Bridge over I-10)

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: AFC 5.10-15C

VISUAL RESOURCES - FIGURE 9A

Genesis Solar Energy Project - Existing Visual Conditions at KOP 2 (Wiley's Well Bridge over I-10)

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: AFC 5.10-16A

VISUAL RESOURCES - FIGURE 9B

Genesis Solar Energy Project - Visual Simulation of Phase 2 at KOP 2 (Wiley's Well Bridge over I-10)

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: AFC 5.10-16C

VISUAL RESOURCES - FIGURE 9C

Genesis Solar Energy Project - View of Project Gen-Tie Transmission Line Poles, Looking Northwest from Wiley's Well Road

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: William Kanemoto

VISUAL RESOURCES - FIGURE 10A

Genesis Solar Energy Project - Existing Visual Conditions at KOP 3 (Corn Springs BLM Road)

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: AFC 5.10-17A

VISUAL RESOURCES - FIGURE 10B

Genesis Solar Energy Project - Visual Simulation of Phase 2 at KOP 3 (Corn Springs BLM Road)

MARCH 2010



VISUAL RESOURCES

CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

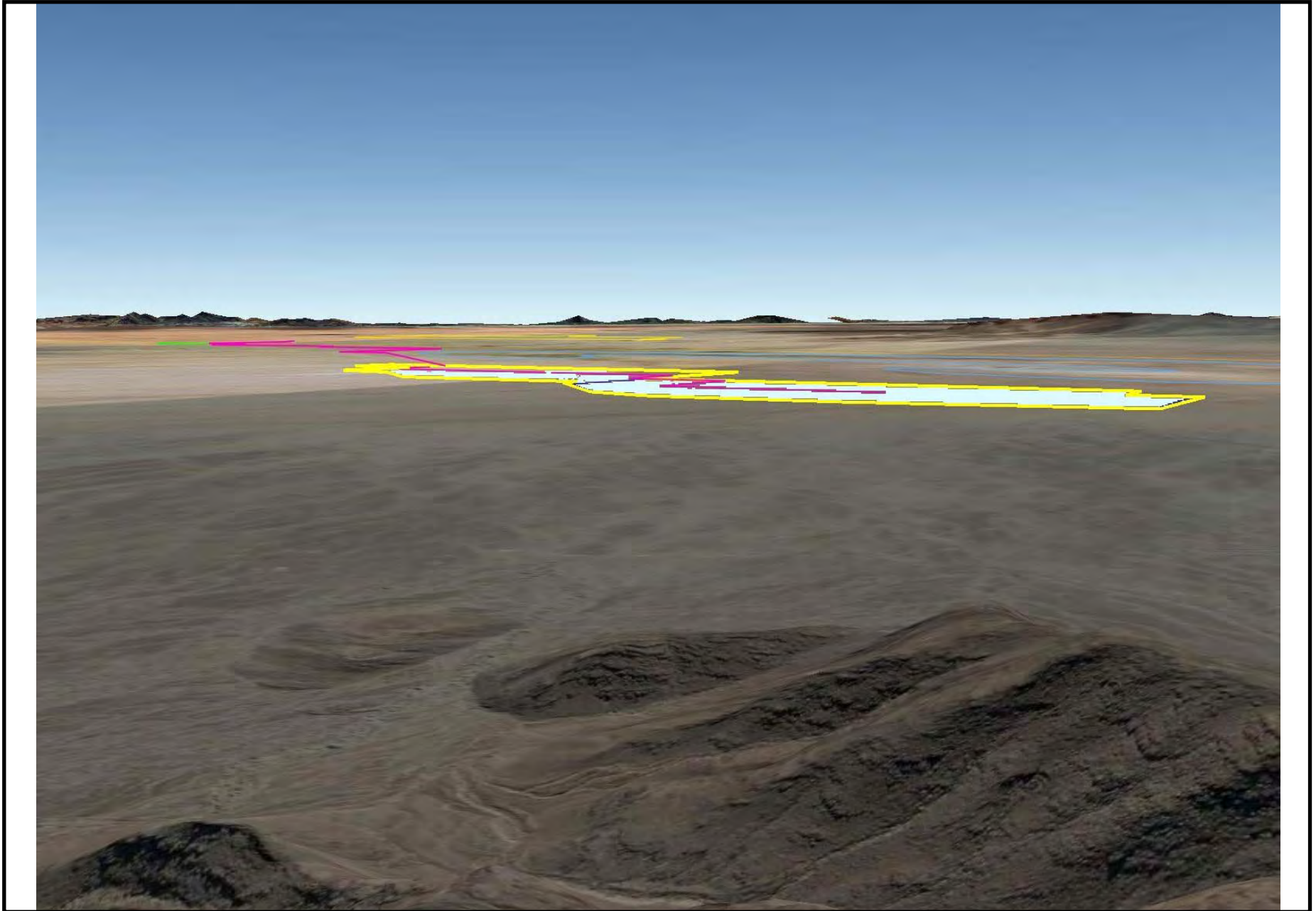
SOURCE: AFC 5.10-17C

VISUAL RESOURCES - FIGURE 11A

Genesis Solar Energy Project - Simulated View of Project Footprint from KOP 4A (Palen Mountains at Middleground Distance)

MARCH 2010

VISUAL RESOURCES



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

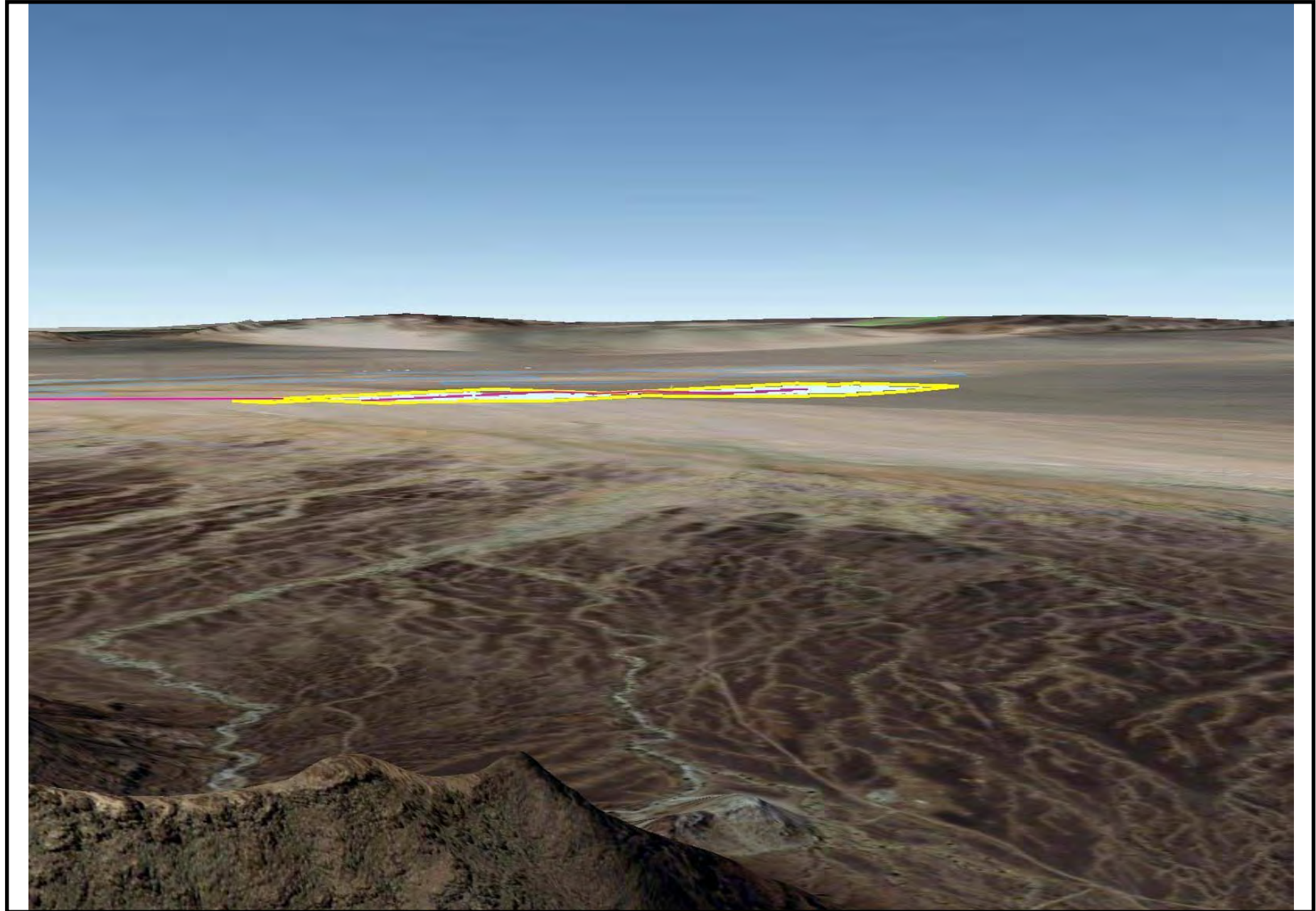
SOURCE: William Kanemoto

VISUAL RESOURCES - FIGURE 11B

Genesis Solar Energy Project - Simulated View of Project Footprint from KOP 4B (McCoy Mountains at Background Distance)

MARCH 2010

VISUAL RESOURCES



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: William Kanemoto

VISUAL RESOURCES - FIGURE 12

Genesis Solar Energy Project - Trough Project Examples (Aerial Views)



Unidentified trough project under different lighting conditions



Acciona Nevada Solar One



Acciona Nevada Solar One

VISUAL RESOURCES - FIGURE 13A

Genesis Solar Energy Project - Trough Spread Glare at Kramer Junction

MARCH 2010

VISUAL RESOURCES



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: William Kanemoto

VISUAL RESOURCES - FIGURE 13B

Genesis Solar Energy Project - Trough Spread Glare at Nevada Solar One

MARCH 2010

VISUAL RESOURCES



CALIFORNIA ENERGY COMMISSION - SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION, MARCH 2010

SOURCE: William Kanemoto

C.13 - WASTE MANAGEMENT

Testimony of James Thurber

C.13.1 SUMMARY OF CONCLUSIONS

U.S. Bureau of Land Management (BLM) and the California Energy Commission staff (hereafter jointly referred to as staff) conclude that management of the waste generated during construction, operation, and closure/decommissioning of the Genesis Solar Energy Project (GSEP) would not result in any significant adverse impacts under CEQA or NEPA, and would comply with applicable waste management laws, ordinances, regulations, and standards if the measures proposed in the Application for Certification (AFC) and staff's proposed conditions of certification are implemented. Conditions of Certification referred to herein serve the purpose of both the Energy Commission's Conditions of Certification for purposes of the California Environmental Quality Act (CEQA) and BLM's Mitigation Measures for purposes of the national Environmental Policy Act (NEPA).

C.13. INTRODUCTION

This Staff Assessment/Draft Environmental Impact Statement (SA/DEIS) presents an analysis of issues associated with wastes generated from the proposed construction and operation of the GSEP. The technical scope of this analysis encompasses solid wastes existing on site and those to be generated during facility construction and operation. Management and discharge of wastewater is addressed in the **Soil and Water Resources** section of this document. Additional information related to waste management may also be covered in the **Worker Safety** and **Hazardous Materials Management** sections of this document.

The Energy Commission and BLM's staff's objectives in conducting this waste management analysis are to ensure that:

- the management of project wastes would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Compliance with LORS ensures that wastes generated during the construction and operation of the proposed project would be managed in an environmentally safe manner.
- the disposal of project wastes would not result in significant adverse impacts to existing waste disposal facilities.
- during project construction, operation, and closure/decommissioning the site is managed in such a way that project wastes and waste constituents would not pose a significant risk to humans or the environment.

C.13.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

The analysis of the proposed project effects must comply with both CEQA and NEPA requirements given the respective power plant licensing and land jurisdictions of the California Energy Commission and U.S. Bureau of Land Management (BLM). CEQA requires that the significance of individual effects be determined by the Lead Agency; however, the use of specific significance criteria is not required by NEPA.

Because this document is intended to meet the requirements of both NEPA and CEQA, the methodology used for determining environmental impacts of the proposed project includes a consideration of guidance provided by both laws.

CEQA requires a list of criteria that are used to determine the significance of identified impacts. A significant impact is defined by CEQA as “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project” (State CEQA Guidelines Section 15382).

In comparison, the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the NEPA (CEQ NEPA Regulations) states that “‘Significantly’ as used in NEPA requires considerations of both context and intensity...” (40 CFR 1508.27). Therefore, thresholds serve as a benchmark for determining if a project action will result in a significant adverse environmental impact when evaluated against the baseline. CEQA NEPA Regulations requires that an Environmental Impact Statement (EIS) be prepared when a proposed major federal action (project) as a whole has the potential to “significantly affect the quality of the human environment.”

Thresholds for determining significance in this section are based on Appendix G of the CEQA Guidelines (CCR 2006) and performance standards or thresholds identified by the Energy Commission staff. In addition, staff’s evaluation of the environmental effects of the proposed project on waste management (i.e., those listed below) includes an assessment of the context and intensity of the impacts, as defined in the NEPA implementing regulations 40 CFR Part 1508.27.

The following federal, state, and local environmental laws, ordinances, regulations, and standards (LORS) have been established to ensure the safe and proper management of both solid and hazardous wastes in order to protect human health and the environment. Project compliance with the various LORS is a major component of staff’s determination regarding the significance and acceptability of the GSEP with respect to management of waste. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

WASTE MANAGEMENT Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

Applicable LORS	Description
Federal	
<p>Title 42, United States Code, §§ 6901, et seq.</p> <p>Solid Waste Disposal Act of 1965 (as amended and revised by the Resource Conservation and Recovery Act of 1976, et al.)</p>	<p>The Solid Waste Disposal Act, as amended and revised by the Resource Conservation and Recovery Act (RCRA) et al., establishes requirements for the management of solid wastes (including hazardous wastes), landfills, underground storage tanks, and certain medical wastes. The statute also addresses program administration, implementation, and delegation to states, enforcement provisions, and responsibilities, as well as research, training, and grant funding provisions.</p> <p>RCRA Subtitle C establishes provisions for the generation, storage, treatment, and disposal of hazardous waste, including requirements addressing:</p> <ul style="list-style-type: none"> • Generator record keeping practices that identify quantities of hazardous wastes generated and their disposition; • Waste labeling practices and use of appropriate containers; • Use of a manifest when transporting wastes; • Submission of periodic reports to the United States Environmental Protection Agency (U.S. EPA) or other authorized agency; and • Corrective action to remediate releases of hazardous waste and contamination associated with RCRA-regulated facilities. <p>RCRA Subtitle D establishes provisions for the design and operation of solid waste landfills.</p> <p>RCRA is administered at the federal level by U.S. EPA and its 10 regional offices. The Pacific Southwest regional office (Region 9) implements U.S. EPA programs in California, Nevada, Arizona, and Hawaii.</p>
<p>Title 42, United States Code, §§ 9601, et seq.</p> <p>Comprehensive Environmental Response, Compensation and Liability Act</p>	<p>The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), also known as Superfund, establishes authority and funding mechanisms for cleanup of uncontrolled or abandoned hazardous waste sites, as well as cleanup of accidents, spills, or emergency releases of pollutants and contaminants into the environment.</p> <p>Among other things, the statute addresses:</p> <ul style="list-style-type: none"> • Reporting requirements for releases of hazardous substances; • Requirements for remedial action at closed or abandoned hazardous waste sites, and brownfields; • Liability of persons responsible for releases of hazardous substances or waste; and • Requirements for property owners/potential buyers to conduct “all appropriate inquiries” into previous ownership and uses of the property to 1) determine if hazardous substances have been or may have been released at the site, and 2) establish that the owner/buyer did not cause or contribute to the release. A Phase I Environmental Site Assessment is commonly used to satisfy

Applicable LORS	Description
	CERCLA “all appropriate inquiries” requirements.
Title 40, Code of Federal Regulations (CFR), Subchapter I – Solid Wastes	<p>These regulations were established by U.S. EPA to implement the provisions of the Solid Waste Disposal Act and RCRA (described above). Among other things, the regulations establish the criteria for classification of solid waste disposal facilities (landfills), hazardous waste characteristic criteria and regulatory thresholds, hazardous waste generator requirements, and requirements for management of used oil and universal wastes.</p> <ul style="list-style-type: none"> • Part 246 addresses source separation for materials recovery guidelines. • Part 257 addresses the criteria for classification of solid waste disposal facilities and practices. • Part 258 addresses the criteria for municipal solid waste landfills. • Parts 260 through 279 address management of hazardous wastes, used oil, and universal wastes (i.e., batteries, mercury-containing equipment, and lamps). <p>U.S. EPA implements the regulations at the federal level. However, California is an authorized state so most of the solid and hazardous waste regulations are implemented by state agencies and authorized local agencies in lieu of U.S. EPA.</p>
Title 49, CFR, Parts 172 and 173 Hazardous Materials Regulations	U.S. Department of Transportation established standards for transport of hazardous materials and hazardous wastes. The standards include requirements for labeling, packaging, and shipping of hazardous materials and hazardous wastes, as well as training requirements for personnel completing shipping papers and manifests. Section 172.205 specifically addresses use and preparation of hazardous waste manifests in accordance with Title 40, CFR, Section 262.20.
Clean Water Act (CWA)	Controls discharge of wastewater to the surface waters of the U.S. Genesis Solar Energy Project will discharge sanitary wastewater to one onsite septic tank and leach field wastewater treatment system that will comply with CWA requirements.
State	
California Health and Safety Code, Chapter 6.5, §§ 25100, et seq. Hazardous Waste Control Act of 1972, as amended	<p>This California law creates the framework under which hazardous wastes must be managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA program. It also provides for the designation of California-only hazardous wastes and development of standards (regulations) that are equal to or, in some cases, more stringent than federal requirements.</p> <p>The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) administers and implements the provisions of the law at the state level. Certified Unified Program Agencies (CUPAs) implement some elements of the law at the local level.</p>
Title 22, California Code of Regulations (CCR),	These regulations establish requirements for the management and disposal of hazardous waste in accordance with the provisions of the California Hazardous Waste Control Act and federal RCRA. As with the federal requirements, waste generators must determine if their wastes

Applicable LORS	Description
<p>Division 4.5</p> <p>Environmental Health Standards for the Management of Hazardous Waste</p>	<p>are hazardous according to specified characteristics or lists of wastes. Hazardous waste generators must obtain identification numbers, prepare manifests before transporting the waste off site, and use only permitted treatment, storage, and disposal facilities. Generator standards also include requirements for record keeping, reporting, packaging, and labeling. Additionally, while not a federal requirement, California requires that hazardous waste be transported by registered hazardous waste transporters.</p> <p>The standards addressed by Title 22, CCR include:</p> <ul style="list-style-type: none"> • Identification and Listing of Hazardous Waste (Chapter 11, §§ 66261.1, et seq.) • Standards Applicable to Generators of Hazardous Waste (Chapter 12, §§ 66262.10, et seq.) • Standards Applicable to Transporters of Hazardous Waste (Chapter 13, §§ 66263.10, et seq.) • Standards for Universal Waste Management (Chapter 23, §§ 66273.1, et seq.) • Standards for the Management of Used Oil (Chapter 29, §§ 66279.1, et seq.) • Requirements for Units and Facilities Deemed to Have a Permit by Rule (Chapter 45, §§ 67450.1, et seq.) <p>The Title 22 regulations are established and enforced at the state level by DTSC. Some generator standards are also enforced at the local level by CUPAs.</p>
<p>California Health and Safety Code, Chapter 6.11 §§ 25404– 25404.9</p> <p>Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program)</p>	<p>The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the six environmental and emergency response programs listed below.</p> <ul style="list-style-type: none"> • Aboveground Storage Tank Program • Business Plan Program • California Accidental Release Prevention (CalARP) Program • Hazardous Material Management Plan / Hazardous Material Inventory Statement Program • Hazardous Waste Generator / Tiered Permitting Program • Underground Storage Tank Program <p>The state agencies responsible for these programs set the standards for their programs while local governments implement the standards. The local agencies implementing the Unified Program are known as Certified Unified Program Agencies (CUPAs). Riverside County Department of Environmental Health is the area CUPA.</p> <p>Note: The Waste Management analysis only considers application of the Hazardous Waste Generator/Tiered Permitting element of the Unified Program. Other elements of the Unified Program may be addressed in the Hazardous Materials and/or Worker Health and Safety analysis sections.</p>

Applicable LORS	Description
<p>Title 27, CCR, Division 1, Subdivision 4, Chapter 1, §§ 15100, et seq.</p> <p>Unified Hazardous Waste and Hazardous Materials Management Regulatory Program</p>	<p>While these regulations primarily address certification and implementation of the program by the local CUPAs, the regulations do contain specific reporting requirements for businesses.</p> <ul style="list-style-type: none"> Article 9 – Unified Program Standardized Forms and Formats (§§ 15400–15410). Article 10 – Business Reporting to CUPAs (§§ 15600–15620).
<p>Public Resources Code, Division 30, §§ 40000, et seq.</p> <p>California Integrated Waste Management Act of 1989</p>	<p>The California Integrated Waste Management Act of 1989 (CIWMA) (as amended) establishes mandates and standards for management of solid waste. Among other things, the law includes provisions addressing solid waste source reduction and recycling, standards for design and construction of municipal landfills, and programs for county waste management plans and local implementation of solid waste requirements.</p>
<p>Title 14, CCR, Division 7, § 17200, et seq.</p> <p>California Integrated Waste Management Board</p>	<p>These regulations further implement the provisions of the California Integrated Waste Management Act and set forth minimum standards for solid waste handling and disposal. The regulations include standards for solid waste management, as well as enforcement and program administration provisions.</p> <ul style="list-style-type: none"> Chapter 3 – Minimum Standards for Solid Waste Handling and Disposal. Chapter 3.5 – Standards for Handling and Disposal of Asbestos Containing Waste. Chapter 7 – Special Waste Standards. Chapter 8 – Used Oil Recycling Program. Chapter 8.2 – Electronic Waste Recovery and Recycling.
<p>California Health and Safety Code, Division 20, Chapter 6.5, Article 11.9, §25244.12, et seq.</p> <p>Hazardous Waste Source Reduction and Management Review Act of 1989 (also known as SB 14).</p>	<p>This law was enacted to expand the state’s hazardous waste source reduction activities. Among other things, it establishes hazardous waste source reduction review, planning, and reporting requirements for businesses that routinely generate more than 12,000 kilograms (~26,400 pounds) of hazardous waste in a designated reporting year. The review and planning elements are required to be done on a 4-year cycle, with a summary progress report due to DTSC every 4th year.</p>
<p>Title 22, CCR,</p>	<p>These regulations further clarify and implement the provisions of the</p>

Applicable LORS	Description
§67100.1 et seq. Hazardous Waste Source Reduction and Management Review.	Hazardous Waste Source Reduction and Management Review Act of 1989 (noted above). The regulations establish the specific review elements and reporting requirements to be completed by generators subject to the act.
Title 23, CCR Division 3, Chapters 16 and 18	These regulations relate to hazardous material storage and petroleum UST cleanup, as well as hazardous waste generator permitting, handling, and storage. The DTSC Riverside County CUPA is responsible for local enforcement.
California Fire Code	Controls storage of hazardous materials and wastes and the use and storage of flammable/combustible liquids. Waste will be accumulated and stored in accordance with Fire Code requirements. Permits for storage containers will be obtained, as needed, from the Riverside County Fire Department.
Local	
County of Riverside General Plan	The General Plan ensures all new development complies with applicable provisions of the County Integrated Solid Waste Management Plan. In addition, Safety Element, Policy S 6.1 describes the County's policies and siting criteria identified in the County of Riverside Hazardous Waste Management Plan including coordination of hazardous waste facility responsibilities on a regional basis through the Southern California Hazardous Waste Management Authority.
Riverside County Code Title 8 Chapters 8.60, 8.84, and 8.132, Health and Safety	Establishes requirements for the use, generation, storage, and disposal of hazardous and non-hazardous materials and wastes within the County.
Riverside County, Countywide Integrated Waste Management Plan	This document sets forth the county's goals, policies, and programs for reducing dependence on landfilling solid wastes and increasing source reduction, recycling, and reuse of products and waste, in compliance with the CIWMA. The plan also addresses the siting and development of recycling and disposal facilities and programs within the county.

C.13.4 PROPOSED PROJECT

C.13.4.1 SETTING AND EXISTING CONDITIONS

Proposed Project

The proposed GSEP site is approximately 4,640 acres of public land administered by the Bureau of Land Management (BLM). The project site is located in east Riverside County about 25 miles west of Blythe and 27 miles east of Desert Center. The completed site will occupy an estimated 1,800 acres at the main facility located approximately 2 miles north of Interstate 10 (I-10). An additional 90 acres of right-of-way is required for the linear facilities that extend south and east from the site to reach I-10; the transmission line will continue south of I-10 to connect with the Blythe Energy Project Transmission Line.

The Project is located in the central part of Chuckwalla Valley, an east-southeast trending valley that gently slopes southeast toward the Colorado River. The Project site lies on alluvial fans formed at the base of the Palen Mountains to the north and the McCoy Mountains to the east, and the eastern portion of the Project site is underlain by a broad valley-axial drainage that extends southward between these mountains and drains to the Ford Dry Lake playa located about one mile south of the Project site. The Project site is relatively flat and generally slopes from north to south with elevations of approximately 400 to 370 feet above mean sea level. The GSEP site is undeveloped desert with creosote and bursage scrub vegetation. The area has historically been used for both off-highway vehicle use and sheep grazing; however, neither activity currently occurs (GSEP 2009a). Historic military training is known to have occurred in the local area (General Patton's tank corps) and further east at Blythe Air Field.

The proposed project consists of two independent 125MW power blocks and solar collector fields designated Unit 1 and Unit 2. The two project power blocks and solar arrays will occupy about 1,360 acres. Physically between Unit 1 and Unit 2 will be two evaporation pond areas, a land treatment unit (LTU), and the administration and warehouse building. These areas along with access roads, ancillary facilities, and some open areas combine for the total 1,800 acre fenced area (GSEP 2009a). Construction parking, trailers, laydown areas, and solar collector assembly areas will be located within the project foot print.

The principal project elements include:

- Each solar collector field is made up of multiple single-axis-tracking parabolic trough solar collectors aligned on a north-south axis. Each solar collector has a parabolic-shaped reflector that focuses the sun's direct normal radiation on a receiver known as a heat collection element (HCE) located at the focal point of the parabola. The collectors track the sun from east to west during the diurnal cycle to ensure the sun is continuously focused on the HCE. The heat transfer fluid (HTF) is heated up to approximately 740°F as it circulates through the HCEs and returns to the solar steam generator (SSG) where the fluid is used to generate high-pressure steam. The north-south oriented multiple tracking parabolic solar collectors will occupy cover 1,360 acres.
- Each 125MW power block contains a solar steam generator (SSG), steam turbine generator (STG), wet cooling towers, natural gas-fired auxiliary boilers, HTF surge tanks, emergency diesel generators, raw and treated water storage tanks, demineralized water storage tank, water treatment unit, and control/warehouse building.
- Two 24-acre double-lined (three 8-acre cells each) evaporation ponds for management of cooling tower blowdown water. The evaporation ponds will be permitted as Class II Surface Impoundments in accordance with requirements of the Colorado River Regional Water Quality Control Board (CRRWQCB) and the California Integrated Waste Management Board (CIWMB).
- One 10 acre land treatment unit (LTU) for bioremediation of HTF contaminated soil classified as non-hazardous (<10,000 mg/Kg). The unit will be designed and permitted as a Class II LTU in accordance with CRRWQCB and CIWMB requirements. Once the soil has been treated to a concentration of less than 100

mg/kg HTF, it will be moved from the LTU to another portion of the site until it is reused at the facility as fill material. Soil classified as hazardous (>10,000 mg/Kg HTF) will not be treated in the LTU but will be hauled to a Class I disposal facility.

- One on-site 230kV switchyard located near power block Unit 2 measuring 270 feet by 400 feet.
- An 8-mile long generation-tie (gen-tie) line will be routed in a southeasterly ROW eventually connecting to the proposed Southern California Edison (SoCal Edison) 500-230 kV Colorado River substation via the Blythe Energy Project Transmission Line (BEPTL).
- A 6-mile long natural gas supply line will serve the project from a SoCal Gas Company high-pressure pipeline located on the north side of I-10.
- On-site groundwater wells will supply the project and require on-site treatment consisting of a pre-treatment system upstream of the cooling tower, and a post-treatment system downstream of the cooling tower. Water treatment will include a multi-media filter (MMF) and two-stage reverse osmosis (RO) unit for pre-treatment upstream of the cooling tower. The waste stream from the MMF unit is discharged into the on-site evaporation ponds and the waste stream from the second RO unit is discharged into the wastewater storage tank. Post-treatment will also consist of an MMF and RO unit and the waste stream from the MMF and second RO unit will be discharged into the on-site evaporation ponds. Finally, treated water will be further processed through a mixed-bed demineralizer and used for the steam generator cycle and mirror washing.
- Approximately 26 miles of paved and unpaved site access roads.

Surrounding Area

The proposed project site is located in eastern Riverside County. The surrounding area consists of undeveloped desert land with the small rural community of Desert Center located 27 miles to the west and the larger city of Blythe located 25 miles to the east. Interstate 10 passes two miles south of the southernmost border of the project site and connects the project with the local communities.

The Palen/McCoy Wilderness Area lies adjacent to the north site boundary and the Ford Dry Lake lakebed is one mile to the south. The Ironwood and Chuckwalla State Prisons are located 9 miles southeast of the GSEP site.

C.13.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

This waste management analysis addresses: a) existing project site conditions and the potential for contamination associated with prior activities on or near the project site, and b) the impacts from the generation and management of wastes during project construction and operation.

Existing Project Site Conditions and Potential for Contamination

For any site in California proposed for the construction of a power plant, the applicant must provide documentation about the nature of any potential or existing releases of

hazardous substances or contamination at the site. If potential or existing releases or contamination at the site are identified, the significance of the release or contamination would be determined by site-specific factors, including, but not limited to: the amount and concentration of contaminants or contamination; the proposed use of the area where the contaminants/contamination is found; and any potential pathways for workers, the public, or sensitive species or environmental areas to be exposed to the contaminants. Any unmitigated contamination or releases of hazardous substances that pose a risk to human health or environmental receptors would be considered significant by Energy Commission staff.

As a first step in documenting existing site conditions, the Energy Commission's power plant site certification regulations require that a Phase I Environmental Site Assessment (ESA) be prepared¹ and submitted as part of an AFC. The Phase I ESA is conducted to identify any conditions indicative of releases and threatened releases of hazardous substances at the site and to identify any areas known to be contaminated (or a source of contamination) on or near the site.

In general, the Phase I ESA uses a qualified environmental professional to conduct inquiries into past uses and ownership of the property, research hazardous substance releases and hazardous waste disposal at the site and within a certain distance of the site, and visually inspect the property, making observations about the potential for contamination and possible areas of concern. After conducting all necessary file reviews, interviews, and site observations, the environmental professional then provides findings about the environmental conditions at the site. In addition, since the Phase I ESA does not include sampling or testing, the environmental professional may also give an opinion about the potential need for any additional investigation. Additional investigation may be needed, for example, if there were significant gaps in the information available about the site, an ongoing release is suspected, or to confirm an existing environmental condition.

If additional investigation is needed to identify the extent of possible contamination, a Phase II ESA may be required. The Phase II ESA usually includes sampling and testing of potentially contaminated media to verify the level of contamination and the potential for remediation at the site.

In conducting its assessment of a proposed project, staff will review the project's Phase I ESA and work with the appropriate oversight agencies as necessary to determine if additional site characterization work is needed and if any mitigation is necessary at the site to ensure protection of human health and the environment from any hazardous substance releases or contamination identified.

Impacts from Generation and Management of Wastes during Construction, Operation and Project Closure/Decommissioning

Regarding the management of project-related wastes generated during construction, operation, and closure/decommissioning of the proposed project, staff reviewed the

¹ Title 20, California Code of Regulations, section 1704(c) and Appendix B, section (g)(12)(A). Note that the Phase I ESA must be prepared according to American Society for Testing and Materials protocol or an equivalent method agreed upon by the applicant and the Energy Commission staff.

applicant's proposed solid and hazardous waste management methods and determined the methods proposed are consistent with the LORS identified for waste disposal and recycling. As mentioned previously, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management. Staff then reviewed the capacity available at off-site treatment and disposal sites and determined whether or not the proposed power plant's waste would impact the available capacity.

DIRECT/INDIRECT IMPACTS AND MITIGATION

Existing Site Conditions

A Phase I ESA, dated August 2009, was prepared by Tetra Tech EC, Inc., in accordance with the American Society for Testing and Materials Standard Practice E 1527-05 for ESAs. The Phase I ESA addressed conditions on portions or most of 13 sections in Township 6 South, Range 19 East, and parts of four sections in Township 6 South, Range 20 East; the Phase I ESA is included as Appendix F of the project's AFC. The ESA did not identify any Recognized Environmental Conditions (RECs) in connection with historic or current site operations. A REC is the presence or likely presence of any hazardous substances or petroleum products on a property under the conditions that indicate an existing release, past release, or a material threat of a release of any hazardous substance or petroleum products into structures on the property or in the ground, groundwater, or surface water of the property.

The 1,800 acre project site and 90 acres of linear access road consists of undeveloped BLM land only used for recreation. There are no existing roads, structures on the project site or adjoining lands. In addition, the site is not listed on the Environmental First Search (EFS) Site Information Report (GSEP 2009a, Appendix E).

No RECs were identified within the one-mile radius search of offsite areas. However, the project area was within General Patton's World War II (WWII) Desert Training Center, California-Arizona Maneuver Area region (1942 to 1944). The region surrounding the Project Area was considered a suitable location for training troops that would be deployed in the North Africa Campaign. After 2 years in operation and the training of one million troops, the desert training camps were closed in 1944. Military trash scatter including ration containers, military-issue utensils, and one 50-caliber cartridge were identified during the Tetra Tech site visits (GSEP 2009a, Appendix E). There is potential for unexploded ordnance (UXO) at the project site.

In the event that contamination is identified during any phase of construction, staff proposes Condition of Certification **Waste-1** requiring that any additional work must be conducted under the oversight of DTSC, with Energy Commission Compliance Project Manager (CPM) involvement. Furthermore, staff recommends proposed Conditions of Certification **Waste-2** and **Waste-3** be adopted to address any soil contamination contingency that may be encountered during project construction. **Waste-2** would require that an experienced and qualified Professional Engineer or Professional Geologist be available for consultation in the event contaminated soil is encountered. If contaminated soil is identified, **Waste-3** would require that the Professional Engineer or Professional Geologist inspect the site, determine what is required to characterize the

nature and extent of contamination, and provide a report to the CPM and DTSC with findings and recommended actions.

Proposed Project

Proposed Project - Construction Impacts and Mitigation

Site preparation and construction of the proposed solar project and its associated facilities would last approximately 37 months and generate both non-hazardous and hazardous wastes in solid and liquid forms. Before construction can begin, the project owner will be required to develop and implement a Construction Waste Management Plan per proposed Condition of Certification **Waste-4** to ensure that the waste will be recycled when possible and properly landfilled when necessary. In addition, the project owner will be required to develop a UXO identification training and reporting procedures program per proposed Condition of Certification **Waste-5** to ensure site workers are properly trained to recognize, avoid, and report UXO. The UXO training program should include the identification of trained UXO ordnance experts that are available to complete removal of UXO and supplemental geophysical surveys to search for additional or buried ordnance.

Non-Hazardous Wastes

Construction activities would generate an estimated 40 cubic yards per week of non-hazardous solid wastes, consisting of scrap wood, steel, glass, plastic, and paper, and another 1 cubic yard per week of office-related waste. Of these items, recyclable materials would be separated and removed as needed to recycling facilities. Non-recyclable materials (insulation, other plastics, food waste, roofing materials, vinyl flooring and base, carpeting, paint containers, packing materials, etc.) would be disposed at a Class III landfill.

Non-hazardous liquid wastes would be generated during construction, and would include 200 gallons of sanitary waste per day. Sanitary wastes would be pumped to tanker trucks by licensed contractors for transport to a sanitary water treatment plant. Please see the **Soil and Water Resources** section of this document for more information on the management of project wastewater.

Hazardous Wastes

During construction, anticipated hazardous wastes include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, and waste batteries. Estimated amounts are 1 cubic yard of empty containers (per week), 175 gallons of oils, solvents, paint, and oily rags (every 90 days), and 10 batteries (per year). Empty hazardous material containers would be returned to the vendor or disposed at a hazardous waste facility; solvents, used oils, paint, oily rags, and adhesives would be recycled or disposed at a hazardous waste facility; and spent batteries would be disposed at a recycling facility. In addition, a one-time generation of 1,000 gallons of Heat Exchanger cleaning solvent (chelant type solution) would require disposal at a permitted hazardous waste facility (GSEP 2009a, pages 5.13-5).

The generation of hazardous waste requires a unique hazardous waste generator identification number. The hazardous waste generator number is determined based on

site location and therefore, both the construction contractor and the project owner/operator could be considered the generator of hazardous wastes at the site. Therefore, the project owner would be required to obtain a unique hazardous waste generator identification number for the site prior to starting construction, pursuant to proposed Condition of Certification **Waste-6**. This would ensure compliance with California Code of Regulation Title 22, Division 4.5.

Hazardous waste would be collected in hazardous waste accumulation containers and stored in a laydown area, warehouse/shop area, or storage tank on equipment skids for less than 90 days. The accumulated wastes would then be properly manifested, transported, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies. Staff reviewed the disposal methods and concluded that all wastes would be disposed of in accordance with all applicable LORS. Should any construction waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by the proposed Condition of Certification **Waste-7** to notify the Compliance Project Manager (CPM) whenever the owner becomes aware of this action.

Staff has reviewed the proposed waste management methods described in AFC section 5.13.2.1, and in the responses to data requests, and concludes that project construction wastes would be managed in accordance with all applicable LORS. Absent any unusual circumstances, staff considers project compliance with LORS to be sufficient to ensure that no significant impacts would occur as a result of project waste management activities.

In the event that construction excavation, grading, or trenching activities for the proposed project encounter potentially contaminated soils, specific waste handling, disposal, or other precautions may be necessary pursuant to hazardous waste management LORS. Staff finds that proposed Conditions of Certification **Waste-1** through **-3** would be adequate to address any soil contamination contingency that may be encountered during construction of the project and would further support compliance with LORS.

Proposed Project - Construction and Demolition (C&D) Waste Diversion and Mitigation

The Integrated Waste Management Act of 1989 [Assembly Bill (AB) 939, Sher, Chapter 1095, Statutes of 1989] set landfill waste diversion goals of 50 percent (by 2000) for local jurisdictions. To meet this goal, many jurisdictions require applicants for construction and demolition projects to submit a reuse/recycling plan for at least 50 percent of C&D materials prior to the issuance of a building or demolition permit. The GSEP project is required to complete the Riverside County Waste Management Department (RCWMD) Construction and Demolition Waste Diversion Program Reporting Form C (GSEP 2009f, page WM-6). RCWMD and staff will require the applicant to meet the 50 percent waste diversion rate. Adoption of Condition of Certification **Waste-8** will ensure the GSEP owner meet the waste diversion goals of the C&D program. Staff believes that compliance with proposed Condition of Certification **Waste-8** would also help ensure that project wastes are managed properly and further reduce potential impacts to local landfills from project wastes.

Proposed Project - Operation Impacts and Mitigation

The proposed GSEP project would generate both non-hazardous and hazardous wastes in solid and liquid forms under normal operating conditions. Table 5.13-3 of the project AFC gives a summary of the anticipated operation waste streams, estimated waste volumes and generation frequency, and proposed management methods. Before operations can begin, the project owner would be required to develop and implement an Operations Waste Management Plan as required in the proposed Condition of Certification **Waste-9**. This would ensure that an accurate record is maintained of the project's waste storage, generation, and disposal, and compliance with waste regulations is maintained during operation.

Non-Hazardous Solid Wastes

Non-hazardous solid wastes generated during project operations would consist of paper, wood, plastic, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty non-hazardous containers, and other miscellaneous solid wastes. The GSEP AFC does not estimate the volume of these non-hazardous waste generated by the project; similar solar generating projects estimate approximately 10 cubic yards of non-hazardous solid waste per week (SES 2008a). GSEP estimates less than 10 spent household batteries per month, and approximately 50 spent fluorescent bulbs per year would be recycled (GSEP 2009a page 5.13-6). All non-hazardous wastes would be recycled to the greatest extent possible, and the remainder would be removed on a regular basis for disposal in a Class III landfill. Sanitary wastewater solids would be treated with an onsite septic system, and sludge would be delivered to an off-site disposal facility.

Soil may become contaminated with Heat Transfer Fluid (HTF) from spills and leaks within the HTF system. HTF concentrations in soil measured at <10,000 mg/Kg would be placed in the on site bioremediation land treatment unit (LTU), pending approval of the Department of Toxic Substances Control (DTSC) (GSEP 2009a page 5.13-8). On site treatment of contaminated soil may require a permit from DTSC and the project owner will initiate pre-application discussions and determine the permitting process applicable to the facility. An estimated 750 cubic yards per year of contaminated soil would be remediated at the LTU with an irregular frequency (GSEP 2009a page 5.13-6). Following treatment and confirmation sampling and laboratory testing documenting acceptable residual concentrations of HTF, the bioremediated soil will be reused as fill on the project site.

Non-hazardous solid waste will be periodically generated during maintenance of the water treatment filters. Replacement of the spent media (sand, gravel, garnet, anthracite) from the multi-media filters is estimated to produce 2100 cubic feet (78 cubic yards) every 5 years (GSEP 2009f page WM-3). Maintenance of the reverse osmosis filters would generate approximately 440 cartridges (2 inch diameter, 20 inch long) every few months and about 160 RO membrane elements (4 inch diameter by 40 inches long) every 3 to 5 years (GSEP 2009f page WM-3). These non-hazardous waste streams will be taken off site for recycling or disposal at a Class III landfill.

Approximately 50,000 tons of evaporative residue would be removed from the evaporation ponds every seven years or 214,500 tons during the 30-year project life

(see also Non-Hazardous Liquid Wastes) (GSEP 2009a page 5.13-8). This material is anticipated to be non-hazardous solids, possibly requiring on-site dewatering before transport, consisting primarily of salt (sodium, chloride and sulfate) that would be disposed of at a Class II landfill facility (GSEP 2009a; GSEP 2009f page WM-4).

Non-Hazardous Liquid Wastes

Non-hazardous liquid wastes would be generated at the pre- and post- water treatment systems consisting of brine or high TDS water. During facility operation these liquid (brackish water) waste streams combine for an average flow of 182 gpm that would be sent to the RWQCB permitted 24-acre double-lined (three 8-acre cells each) evaporation ponds.

Hazardous Wastes

The project owner/operator would be considered the generator of hazardous wastes at the site during facility operations. Therefore, the project owner's unique hazardous waste generator identification number, obtained prior to construction in accordance with proposed Condition of Certification **Waste-6**, would be retained and used for hazardous waste generated during facility operation.

Hazardous wastes that may be generated during routine project operation include used hydraulic fluid, oils and grease (50,000 gallons per year) from the HTF system, turbine, and other hydraulic equipment, lead-acid batteries (10 per year), and oily rags, oily absorbent and spent oil filters (five 55-gallon drums per month) (GSEP 2009a, page 5.13-6). Plant washdown areas will generate an estimated 3,000 gallons per year of oily water from the oil-water separation system.

Soil contaminated with HTF measured at concentrations >10,000 mg/Kg is anticipated to be approved as Non-RCRA hazardous waste. An estimated 10 cubic yards per year of HTF contaminated soil (>10,000 mg/Kg) will require off site disposal at a Class I landfill (GSEP 2009a page 5.13-6; GSEP 2009f page WM-4 to WM-5).

In addition, spills and unauthorized releases of hazardous materials or hazardous wastes may generate contaminated soils or cleanup materials that may also require management and disposal as hazardous waste. Proper hazardous material handling and good housekeeping practices would help keep spill wastes to a minimum. However, to ensure proper cleanup and management of any contaminated soils or waste materials generated from hazardous materials spills, staff proposes Condition of Certification **Waste-10**, requiring the project owner/operator to document, clean up, and properly manage and dispose of wastes from any hazardous materials spills or releases in accordance with all applicable federal, state, and local requirements. More information on project hazardous materials management spill reporting, containment, and spill control and countermeasures plan provisions for the project are provided in the **Hazardous Materials Management** section of this document.

The amount of hazardous wastes generated during the operation of the GSEP project would not be minor, however with source reduction and recycling of wastes implemented whenever possible the waste requiring Class I disposal would be small. The hazardous wastes would be temporarily stored on site, transported off site by

licensed hazardous waste haulers, and recycled or disposed of at authorized disposal facilities in accordance with established standards applicable to generators of hazardous waste (Title 22, CCR, §66262.10 et seq.). Should any operations waste management-related enforcement action be taken or initiated by a regulatory agency, the project owner would be required by proposed Condition of Certification **Waste-7** to notify the CPM when advised of any such action.

Proposed Project - Closure and Decommissioning Impacts and Mitigation

The closure or decommissioning of the GSEP project would produce both hazardous and non-hazardous solid and liquid waste. The project's General Compliance Conditions of Certification, including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532, and are specifically detailed in **General Conditions**. The plan provides a means for assuring that the facility is constructed, operated and closed in compliance with public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission. Required elements of a facility's closure would be outlined in a facility closure plan as specified in Conditions of Certification **Compliance 11, 12 and 13**. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least 12 months (or other period of time agreed to by the CPM) prior to commencement of closure activities. The facility closure plan will document non-hazardous and hazardous waste management practices including: the inventory, management, and disposal of hazardous materials and wastes, and permanent disposal of permitted hazardous materials and waste storage units.

The handling and management of waste generated by GSEP will follow the hierarchical approach of source reduction, recycling, treatment, and disposal as specified in California Public Resources Code Sections 40051 and 40196. The first priority of the project owner will be to use materials that reduce the waste that is generated. The next level of waste management will involve reusing or recycling wastes, particularly the disassembly and reuse/recycling of the parabolic trough components. For wastes that cannot be recycled, treatment will be used, if possible, to make the waste nonhazardous. Finally, waste that cannot be reused, recycled or treated would be transported off site to a permitted treatment, storage, or disposal facility. Staff expects that there will be adequate landfill capacity available to dispose of both non-hazardous and hazardous waste from the closure or decommissioning of the proposed project. Conditions of Certification **WASTE-6** through **-10** would continue to apply to GSEP during closure or decommissioning of the project.

Proposed Project - Impact on Existing Waste Disposal Facilities

Non-Hazardous Solid Wastes

Construction and operation of the proposed project would respectively generate 40 cubic yards and 10 cubic yards per week of nonhazardous solid waste (wood, paper/cardboard, glass, plastic, insulation, and concrete), respectively. The waste would be stored onsite for less than 30 days, and then recycled or disposed of in a Class III landfill.

Table 5.13-1 of the project AFC identifies five waste disposal facilities in Riverside County (excluding Desert Center Landfill which is scheduled for closure in 2011) that could potentially take the non-hazardous construction and operation wastes generated by the GSEP project. The remaining combined capacity of the five landfill facilities that are expected to be operating in 2011 is over 160 million cubic yards. The total amount of non-hazardous solid waste generated from project construction is estimated to be 6,400 cubic yards (40 cubic yards per week for 37 months), and the total amount from lifetime operations is estimated to be 15,600 cubic yards (10 cubic yards per week for 30 years). These quantities include both recyclable and non-recyclable wastes; the non-recyclable component would contribute much less than 1 percent of the available landfill capacity. Staff finds that disposal of the solid wastes generated by the GSEP project can occur without significantly impacting the capacity or remaining life of any of these facilities.

Hazardous Wastes

AFC Table 5.13-1 lists landfills and recycling facilities that could be used to manage project wastes. Two hazardous waste (Class I) disposal facilities are currently accepting waste and could be used to manage GSEP wastes: the Clean Harbors Buttonwillow Landfill in Kern County and the Chemical Waste Management Kettleman Hills Landfill in Kings County. The Kettleman Hills facility also accepts Class II and Class III wastes. In total, there is a combined excess of 15.5 million cubic yards of remaining hazardous waste disposal capacity at these landfills, with at least 28 to 30 years remaining in their operating lifetimes (EEC2006a, Section 8.14.3.5.2). In addition, the Kettleman Hills facility is in the process of permitting an additional 4.6 to 4.9 million cubic yards of disposal capacity (Waste Management 2009), and the Buttonwillow facility has 40 years to reach its capacity at its current disposal rate (CEC2008aa).

Hazardous wastes generated during construction and operation would be recycled to the extent possible and practical. Those wastes that cannot be recycled would be transported off site to a permitted treatment, storage, or disposal facility. As calculated from waste streams presented in AFC Table 5.13-2 (GSEP 2009a), approximately 1550 cubic yards of recyclable and non-recyclable hazardous waste would be generated over the 37 month construction period. Less than 300 cubic yards of hazardous non-recyclable waste would be generated over the 30-year operating lifetime. Thus hazardous wastes from the GSEP project requiring off-site disposal would be significantly less than the remaining capacity of either Class 1 waste facility.

C.13.4.3 CEQA Level of Significance

Absent any unusual circumstances, staff considers project compliance with LORS and staff's conditions of certification to be sufficient to ensure that no significant impacts would occur as a result of project waste management.

C.13.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would be a single solar field (Unit 1) of the proposed Genesis Solar Energy Project (GESP), resulting in a 125 MW solar facility located within the boundaries of the proposed project, as defined by the applicant (NextEra). This alternative is analyzed for two major reasons: (1) it eliminates about 50 percent of the

proposed project area, so certain impacts are reduced, and (2) by eliminating the eastern solar field, which is located on flowing desert washes, impacts to the sand dune and playa areas and to the Mojave Fringe-toed Lizard habitat would be reduced. The alternative would also help reduce impacts to wildlife movement by reducing an obstruction to the Palen wash. Moreover, it would maintain, thru both fluvial and Aeolian processes, the dune and sandy habitats. The boundaries of the Reduced Acreage Alternative are shown in **Alternatives Figure 1**.

C.13.5.1 Setting and Existing Conditions

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates effects to the eastern 125 MW solar field and relocates the gas yard approximately 1.75 miles northwest of its present location. As a result, the environmental setting consists of the western portion of the proposed project, as well as the area affected by the linear project components.

C.13.5.2 Assessment of Impacts and Discussion of Mitigation

The Reduced Acreage Alternative would generate similar types of hazardous and non-hazardous wastes from construction, demolition and operation of the project. However, the quantities of waste would be reduced by approximately 50 percent. The location of the Reduced Acreage Alternative is the same as the proposed project and would be no closer to any unidentified RECs. Similar to the proposed project, staff will not require investigation and remediation of soil and groundwater contamination. Disposal methods would remain the same as for the proposed project and the same Conditions of Certification (**WASTE 1-10**) would apply. Smaller quantities of waste would require landfill or treatment; waste levels would remain well below 1 percent of expected disposal facility capacity.

C.13.5.3 CEQA Level of Significance

Similar to the proposed project, staff considers project compliance with LORS and staff's conditions of certification to be sufficient to ensure that no significant impacts would occur as a result of waste management associated with the Reduced Acreage Alternative.

C.13.6 DRY COOLING ALTERNATIVE

This section identifies the potential impacts of using air-cooled condenser (ACC) systems rather than the cooling towers proposed by NextEra for the Genesis project. It is assumed that the ACC systems would be located where the cooling towers are currently proposed for each of the two 125 MW power block, as illustrated in **Alternatives Figure 2** (see Section B.3).

Approximately 18 ACC fans would be required for each of the two solar fields. The 18 fans, or ACC's, would operate when the ambient temperature is above 50 degrees Fahrenheit. When the temperature is below 50 degrees Fahrenheit, only 10 of the fans would be used (GSEP 2009f). The 18 ACC fans described in the GSEP cooling study would have a length of approximately 279 feet, a width of approximately 127 feet, and a height of 98 feet (GSEP 2009f). However, based on the ACC preliminary designs for nearby solar thermal projects in similar ambient temperatures, an additional 11,690

square feet could be required for siting of the fans and the fans would be up to 120 feet in height. In addition to the ACC fans, NextEra would use a small Wet Surface Air Cooler when needed to provide auxiliary cooling during extremely hot days (GSEP 2009f). This alternative is analyzed because it would reduce the amount of water required for steam turbine cooling from 822 acre-feet per year (AFY) to 66 AFY. This reduction in water use would reduce impacts to water and biological resources.

C.13.6.1 Setting and Existing Conditions

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates the use of wet-cooling towers and incorporated the use of air-cooled condensers (ACC) in the same location. As a result, the environmental setting would be the same as for the proposed project.

C.13.6.2 Assessment of Impacts and Discussion of Mitigation

Wet-cooling maximizes power plant fuel efficiency by providing a continuous source of effective cooling for the plant's steam condensers. Dry cooling will typically provide less effective cooling of the condensers, reducing the efficiency of the steam cycle portion of the power plant, and thus the overall fuel efficiency of the facility. Since only about one-third of the power from a combined cycle power plant is produced by the steam cycle, however, this negative impact on fuel efficiency is diluted.

The FSA for the Beacon Solar Energy Project (08-AFC-2; BSEP 2009) showed that annual average fuel efficiency would be reduced 5-7 percent compared to a wet cooling system. The Genesis applicant stated that use of dry cooling would result in a 7.4 percent decrease in total annual net MWh compared with a wet cooling system (GSEP 2009a). In order to counter the reduction in generation that would result from dry cooling, the Beacon Solar Energy Project applicant proposed expanding the solar field by 12 percent.

The GSEP applicant states that the proposed project has been optimized for the land available, and therefore solar field expansion is infeasible (GSEP 2009a). However, the power block and solar arrays would occupy approximately 1,360 acres of the 1,800-acre site. Evaporation ponds, access roads, administration buildings, and other support facilities would require a portion of the 1,800-acre site, and there is also remaining open space (GSEP 2009a). Additionally, use of dry-cooling would require smaller evaporation ponds opening up additional land for solar field expansion. A 12 percent increase in the solar field would require approximately 150 additional acres. While it is uncertain whether the entire 150 acres is available for use, and would also comply with the engineering requirements for GSEP, it is clear from the site plan that there is some available land immediately adjacent to existing solar trough rows and this land could be used to offset all or a portion of the efficiency loss due to the use of dry-cooling.

C.13.6.3 CEQA Level of Significance

The dry cooling option would significantly reduce the volume of non-hazardous evaporation pond residue estimated to be 50,000 tons every seven years requiring disposal using the wet cooling option. In addition, the non-hazardous solid waste generated during periodic maintenance of the water treatment filters (spent media of sand, gravel, garnet, anthracite, about 2100 cubic feet every 5 years) and disposal or

recycling of the reverse osmosis filters (approximately 440 cartridges every few months and about 160 RO membrane elements every 3 to 5 years) would be significantly reduced. Consequently, the overall impacts of the project with dry cooling related to waste management (waste generation and disposal) would be reduced compared to the proposed project.

C.13.7 NO PROJECT/NO ACTION ALTERNATIVES

No Project/No Action Alternative #1:

No Action on Genesis Solar Energy Project application and on CDCA land use plan amendment

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no new wastes would be generated. This No Project/No Action Alternative would not result in impacts to waste management at this location. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

No Project/No Action Alternative #2:

No Action on Genesis Solar Energy Project and amend the CDCA land use plan to make the area available for future solar development

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site will be developed with another solar technology. Different solar technologies would create different amounts and types of wastes based on the technology components and requirements; however, it is expected that the construction of all solar technologies at the site would generate waste. As such, impacts to waste management from the solar project would likely be similar to impacts to waste management from the proposed project. Therefore, this No Project/No Action Alternative could result in waste management impacts similar to the impacts under the proposed project.

No Project/No Action Alternative #3:

No Action on Genesis Solar Energy Project application and amend the CDCA land use plan to make the area unavailable for future solar development

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended so no solar projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no wastes would be generated from the construction or operation of the proposed project under this alternative. Therefore, this No Project/No Action Alternative would not result in impacts to waste management. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.13.8 CUMULATIVE IMPACT ANALYSIS

Section B.3, Cumulative Scenario, provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figure 1** and in **Cumulative Tables 1A and 1B**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the eastern Riverside County, are shown on **Cumulative Impacts Figure 2**, I-10 Corridor Existing and Future/Foreseeable Projects, and **Cumulative Tables 2 and 3**. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the I-10 Corridor Area. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects described in Section B.3 have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this SA/Draft EIS.

Geographic Scope of Analysis

The geographic area considered for cumulative impacts on waste management is Riverside County where implementation of the GSEP project could combine with those impacts of other local or regional projects. Cumulative impacts could also occur as a result of development of some of the many proposed solar and wind development projects that have been or are expected to be under consideration by the BLM and the Energy Commission in the near future. Many of these projects are located within the California Desert Conservation Area.

The geographic extent for the analysis of the cumulative impacts associated with the GSEP project includes Riverside County. This geographic scope is appropriate because Class III waste disposal facilities in Riverside County could easily handle all waste generated by the GSEP project. There are no Class I/Class II landfills in Riverside County, but the two nearest hazardous waste disposal sites (Buttonwillow Landfill and Kettleman Hills Landfill) routinely accept hazardous waste from throughout California and both have large capacity and expected life to year 2038-2040.

Effects of Past and Present Projects

For this analysis, the following projects or developments are considered most relevant to effects on waste management. Existing projects currently generating non-hazardous solid waste along the I-10 Corridor include Chuckwalla Valley State Prison, Ironwood State Prison, and Blythe Energy Project. Non-hazardous waste is also generated by the residential and commercial activities in Blythe and Desert Center.

Waste management in the geographic area has been impacted by past and currently approved projects by requiring additional landfill capacity. The Blythe Sanitary Landfill, the closest landfill, is anticipated to have adequate capacity for municipal waste through the year 2134 (GSEP 2009a) accepting about 400 tons per day; there are several other large capacity landfills in the region. The GSEP project wastes would be generated in modest quantities (10 cubic yards or 1 to 2 tons per week), waste recycling would be employed wherever practical, and sufficient capacity is available at several disposal facilities to handle the volumes of wastes that would be generated by the project. The project's incremental effective of solid waste disposal is not cumulatively considerable and would have no cumulative impact on existing projects.

Effects of Reasonably Foreseeable Future Projects

Waste management is also expected to be affected by the following reasonably foreseeable future projects as follows: (1) future projects along the I-10 corridor, and (2) future renewable energy projects in the California desert.

Foreseeable Projects in the Project Area

The GSEP project waste disposal volumes will combine with the waste volumes from four commercial projects, 15 residential projects, and 16 renewable projects along the I-10 Corridor (Cumulative Impacts Table 3). Although the waste volumes would be greatest during construction the actual construction schedule of each project would not likely be coincident such that local landfill daily disposal limitations would be exceeded. Operation waste volumes of transmission line, substation, and solar photovoltaic

projects (not solar-thermal) would be far less than the three solar-thermal energy projects (Palen, Blythe, Mojave Solar Park/Desert Lily Project) and the Blythe Energy Project II Power Plant. Routine (operation) waste disposal of all foreseeable commercial, residential, and energy projects along the I-10 Corridor may combine to occasionally exceed the 400 ton per day limit at the Blythe Sanitary Landfill without adversely impacting the 2.2 million cubic yards of remaining capacity. The Blythe Landfill is the nearest Class III disposal site for these I-10 Corridor Projects and would likely be the first choice for disposal. However, several other landfills are located within 100 miles of GSEP with much larger daily disposal limits. The total amount of available solid waste landfill capacity in Riverside County exceeds 160 million cubic yards. Therefore, even if all 35 of these reasonably foreseeable projects along the I-10 Corridor were constructed, staff concludes that the waste generated by the GSEP project would not result in significant cumulative waste management impacts.

Foreseeable Renewable Projects in the California Desert

As shown on **Figure 1** and **Table 1A** (Cumulative Impacts) solar and wind applications for use of BLM and private land cover approximately 1 million acres of the California Desert Conservation Area. Most of the projects are located outside of the Geographic Extent identified for the waste management cumulative impact analysis. The remaining projects are within the BLM Palm Springs/South Coast Field Office area, and include all of the local I-10 Corridor projects discussed above. Four wind energy projects within the BLM's Palm Springs/South Coast Field Office region are not anticipated to generate significant volumes of solid waste. Implementation of the multiple solar and wind projects proposed to be developed in California desert area would result in an increase in generation of hazardous and non-hazardous solid and liquid waste and would add to the total quantity of waste generated in California and Nevada. However, project wastes would be generated in modest quantities, waste recycling would be employed wherever practical, and sufficient capacity is available at several treatment and disposal facilities to handle the volumes of wastes that would be generated by the project. Therefore, the incremental effect of GSEP project waste disposal impacts, when combined with the effects of waste management impacts created by other reasonably foreseeable regional impacts would be less than significant because the project related waste volumes would not exceed the regional Class I, II, and III waste disposal capacities.

Contribution of the Genesis Solar Energy Project to Cumulative Impacts

Construction. The construction of the Genesis Solar Energy Project (GSEP) is not expected to result in short term adverse impacts related to construction activities. It is expected that some of the cumulative projects described above which are not yet built may be under construction the same time as the GSEP. As a result, there may be substantial short term impacts during construction of those cumulative projects related to waste management.

The GSEP would be expected to contribute only a small amount to the possible short term cumulative impacts related to waste management because the anticipated maximum volume of 40 cubic yards per week (4-10 tons) is readily accommodated by the local and regional landfills.

Operation. The operation of the GSEP is not expected to result in long term adverse impacts during operation of the project related to waste management. It is expected that some of the cumulative projects described above may be operational at the same time as the GSEP. As a result, there may be substantial long term impacts during operation of those cumulative projects related to waste management.

The GSEP would be expected to contribute only a small amount to these possible long term operational cumulative impacts related to waste management because of the small volume of waste requiring landfill disposal.

Decommissioning. The decommissioning of the GSEP is not expected to result in adverse impacts related to waste management similar to construction impacts. It is unlikely that the construction or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of this project, because the decommissioning is not expected to occur for approximately 40 years. As a result, there may not be impacts related to waste management during decommissioning of the GSEP generated by the cumulative projects. As a result, the impacts of the decommissioning of the GSEP would not be expected to contribute to cumulative impacts related to waste management because most components (metal, concrete, asphalt, wood) would be recycled and the volume requiring Class I or Class III landfill disposal would be disposed of over several months.

C.13.9 COMPLIANCE WITH LORS

Energy Commission staff concludes that the proposed GSEP project would comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during both facility construction and operation. The applicant is required to recycle and/or dispose hazardous and non-hazardous wastes at facilities licensed or otherwise approved to accept the wastes. Because hazardous wastes would be produced during both project construction and operation, the GSEP project would be required to obtain a hazardous waste generator identification number from U.S. EPA. The GSEP project would also be required to properly store, package, and label all hazardous waste; use only approved transporters; prepare hazardous waste manifests; keep detailed records; and appropriately train employees, in accordance with state and federal hazardous waste management requirements.

C.13.10 NOTEWORTHY PUBLIC BENEFITS

The specific objectives and purpose of the GSEP are:

- To develop a utility-scale solar energy project utilizing parabolic trough technology;
- To construct and operate an environmentally friendly, economically sound, and operationally reliable solar power generation facility; that will contribute to the State of California's renewable energy goals;
- To locate the project in an area with high solar insolation (i.e., high intensity of solar energy);
- To interconnect directly to the CAISO Grid through BEPTL and the SCE electrical transmission system; and

- To commence construction in 2010 to qualify for the American Recovery and Reinvestment Act (ARRA) of 2009's Renewable Energy Grant Program.

C.13.11 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

WASTE-1 In the event that contamination is identified during assessment of the project site, during any phase of GSEP construction, any additional work to assess and/or remediate any contamination shall be conducted under the oversight of DTSC, with CPM involvement.

Verification: The project owner shall consult with the Department of Toxic Substances Control, and enter into a consent agreement as necessary to ensure oversight of any additional site assessment and remediation work needed to reevaluate the site or address contamination found during any phase of SES Solar Two site construction. The project owner shall ensure that the CPM is involved and apprised of all discussions with Department of Toxic Substances Control, and CPM concurrence shall be required for project decisions addressing site remediation.

WASTE-2 The project owner shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for during site characterization (if needed), demolition, excavation, and grading activities, to the CPM for review and approval. The resume shall show experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil and impact public health, safety and the environment.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

WASTE-3 If potentially contaminated soil is identified during site characterization, demolition, excavation or grading at either the proposed site or linear facilities, as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, representatives of Department of Toxic Substances Control or Regional Water Quality Control Board, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall

contact the CPM and representatives of the Department of Toxic Substances Control or Regional Water Quality Control Board for guidance and possible oversight.

Verification: The project owner shall submit any reports filed by the professional engineer or professional geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-4 The project owner shall prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and shall submit the plan to the CPM for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications; and
- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-5 The project owner shall prepare a UXO Identification, Training and Reporting Plan to properly train all site workers in the recognition, avoidance and reporting of military waste debris and ordnance. The project owner shall submit the plan to the CPM for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

- A description of the training program outline and materials, and the qualifications of the trainers; and
- Identification of available trained experts that will respond to notification of discovery of any ordnance (unexploded or not); and
- Work plan to recover and remove discovered ordnance, and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near surface or buried ordnance in all proposed land disturbance areas.

Verification: The project owner shall submit the UXO Identification, Training and Reporting Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-6 The project owner shall obtain a hazardous waste generator identification number from the United States Environmental Protection Agency (USEPA) prior to generating any hazardous waste during project construction and operations.

Verification: The project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation and notification and receipt of the number to the CPM in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to USEPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM in the next scheduled compliance report.

WASTE-7 Upon notification of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts, and describe how the violation will be corrected.

Verification: The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the way project-related wastes are managed.

WASTE-8 The project owner shall provide a reuse/recycling plan for at least 50 percent of construction and demolition materials prior to any building or demolition. The project owner shall ensure compliance and shall provide proof of compliance documentation to the CPM, including a recycling and reuse summary report, receipts, and records of measurement. Project mobilization and construction shall not proceed until the CPM issues an approval document.

Verification: At least 60 days prior to the start of any construction or demolition activities, the project owner shall submit a reuse recycling plan to the CPM for review and approval. The project owner shall ensure that project activities are consistent with the approved reuse/recycling plan and provide adequate documentation of the types and volumes of wastes generated, how the wastes were managed, and volumes of wastes diverted. Project mobilization and construction shall not proceed until CPM issues an approval document. Not later than 60 days after completion of project construction, the project owner shall submit documentation of compliance with the diversion program requirements to the CPM. The required documentation shall include a recycling and reuse summary report along with all necessary receipts and records of measurement from entities receiving project wastes.

WASTE-9 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the Genesis Solar Energy facility and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;

- Management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes will be managed, and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes will be managed and disposed of upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the CPM for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the CPM within 20 days of notification from the CPM that revisions are necessary.

The project owner shall also document in each Annual Compliance Report the actual volume of wastes generated and the waste management methods used during the year; provide a comparison of the actual waste generation and management methods used to those proposed in the original Operation Waste Management Plan; and update the Operation Waste Management Plan as necessary to address current waste generation and management practices.

WASTE-10 The project owner shall ensure that all spills or releases of hazardous substances, hazardous materials, or hazardous waste are documented and cleaned up and that wastes generated from the release/spill are properly managed and disposed of, in accordance with all applicable federal, state, and local requirements.

Verification: The project owner shall document management of all unauthorized releases and spills of hazardous substances, hazardous materials, or hazardous wastes that occur on the project property or related linear facilities. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; how release was managed and material cleaned up; amount of contaminated soil and/or cleanup wastes generated; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. A copy of the unauthorized release/spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

C.13.12 CONCLUSIONS

Consistent with the three main objectives for staff's waste management analysis (as noted in the Introduction section of this analysis), staff provides the following conclusions:

After review of the applicant's proposed waste management procedures, staff concludes that project wastes would be managed in compliance with all applicable waste management LORS. Staff notes that construction, demolition, and operation wastes would be characterized and managed as either hazardous or non-hazardous waste. All non-hazardous wastes would be recycled to the extent feasible, and nonrecyclable wastes would be collected by a licensed hauler and disposed of at a permitted solid waste disposal facility. Hazardous wastes would be accumulated onsite in accordance with accumulation time, and then properly manifested, transported to, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal companies.

However, to help ensure and facilitate ongoing project compliance with LORS, staff proposes Conditions of Certification **WASTE-1** through **10**. These conditions would require the project owner to do all of the following:

- Ensure the project site is investigated and any contamination identified is remediated as necessary, with appropriate professional and regulatory agency oversight (**WASTE 1, 2, and 3**).
- Prepare Construction Waste Management and Operation Waste Management Plans detailing the types and volumes of wastes to be generated and how wastes will be managed, recycled, and/or disposed of after generation (**WASTE-4 and 9**).
- Prepare and implement a UXO Identification, Training and Reporting Plan and work plan outlining procedures to recover and dispose of ordnance, as well as complete additional field surveys (**WASTE-5**).
- Obtain a hazardous waste generator identification number (**WASTE-6**).
- Report any waste management-related LORS enforcement actions and how violations will be corrected (**WASTE-7**).
- Comply with waste recycling and diversion requirements (**WASTE-8**).
- Ensure that all spills or releases of hazardous substances are reported and cleaned-up in accordance with all applicable federal, state, and local requirements (**WASTE-10**).

The existing available capacity for the Class III landfills that may be used to manage nonhazardous project wastes exceeds 160 million cubic yards. The total amount of non-hazardous wastes generated from construction, demolition and operation of the GSEP project would contribute much less than 1 percent of the projected landfill capacity. Therefore, disposal of project generated non-hazardous wastes would have a less than significant impact on Class III landfill capacity.

In addition, the two Class I disposal facilities that could be used for hazardous wastes generated by the construction and operation of GSEP have a combined remaining

capacity of 15 million cubic yards, with another 4.6 to 4.9 million cubic yards of proposed capacity. The total amount of hazardous wastes generated by the GSEP project would be less than significant in relation to the remaining permitted capacity. Therefore, impacts from disposal of GSEP generated hazardous wastes would also have a less than significant impact on the remaining capacity at Class I landfills.

Staff concludes that management of the waste generated during construction and operation of the GSEP project would not result in any significant adverse impacts, and would comply with applicable LORS, if the waste management practices and mitigation measures proposed in the GSEP project AFC and staff's proposed conditions of certification are implemented.

C.13.13 REFERENCES

CCR 2008 – California Environmental Quality Act (CEQA) Guidelines. Title 14, California Code of Regulations, section 15000 and the following (Cal. Code Regs., tit. 14, §15000 et seq.).

California State Water Resources Control Board (SWRCB) 2010. Geotracker website. <http://geotracker.waterboards.ca.gov/>

California Integrated Waste Management Board (CIWMB) 2009. Jurisdictions with Construction & Demolition (C&D) Ordinances. <http://www.ciwmb.ca.gov/LGCentral/Summaries/33/>

EEC 2006a – Eastshore Energy Center, LLC/ G. Trewitt (tn: 37923) Application for Certification for the Eastshore Energy Center. 09/15/2006 Rec'd 09/22/2006

GSEP 2009a (Gensis Solar Energy Project/T. Bernhardt (tn:) Application for Certification for the Genesis Solar Energy Project, Volumes 1 and 2. Submitted to the California Energy Commission, August 31, 2009.

GSEP 2009f – Applicant's Data Response Set 1A (#1-227) for the Genesis Solar Energy Project. December 14, 2009.

Waste Management 2009 – Kettleman Hills Facility Project Update. http://www.kettlemanhillsfacts.com/project_update.html

C.14 – WORKER SAFETY AND FIRE PROTECTION

Testimony of Alvin Greenberg, Ph.D.

C.14.1 SUMMARY OF CONCLUSIONS

U.S. Bureau of Land Management and Energy Commission staff (hereafter jointly referred to as staff) concludes that if the applicant for the proposed Genesis Solar Energy Project (GSEP) provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program, as required by Conditions of Certification **WORKER SAFETY-1** and **-2** and fulfills the requirements of Conditions of Certification **WORKER SAFETY-3** through **-9**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable laws, ordinances, regulations, and standards. The proposed conditions of certification provide assurance that the Construction Safety and Health Program and the Operations and Maintenance Safety and Health Program proposed by the applicant would be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable laws, ordinances, regulations, and standards.

Staff has considered the position of the Riverside County Fire Department (RCFD) and all relevant information as well as past experience at other solar power plants in California and has determined that the project would cause a significant individual and cumulative impact on local fire protection services. Therefore, staff is proposing mitigation to reduce these impacts to less than significant by requiring payment to the RCFD for capital and personal support (see proposed Conditions of Certification **WORKER SAFETY-7** and **8**).

C.14.2 INTRODUCTION

Worker safety and fire protection is regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Industrial workers at the facility operate equipment and handle hazardous materials daily and may face hazards that can result in accidents and serious injury. Protection measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Preliminary Staff Assessment/Plan Amendment/Draft Environmental Impact Statement (PSA/DPA/DEIS) is to assess the worker safety and fire protection measures proposed by the GSEP and to determine whether the applicant has proposed adequate measures to:

- comply with applicable safety LORS;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

C.14.3 METHODOLOGY AND THRESHOLDS FOR DETERMINING ENVIRONMENTAL CONSEQUENCES

Two issues are assessed in **Worker Safety-Fire Protection**:

1. the potential for impacts on the safety of workers during demolition, construction, and operations activities, and
2. fire prevention/protection, emergency medical response, and hazardous materials spill response during demolition, construction, and operations.

Worker safety issues are thoroughly addressed by Cal/OSHA regulations. If all LORS are followed, workers will be adequately protected. Thus, the standard for staff's review and determination of significant impacts on workers is whether or not the applicant has demonstrated adequate knowledge about and dedication to implementing all pertinent and relevant Cal/OSHA standards.

Regarding fire prevention matters, staff reviews and evaluates the on-site fire-fighting systems proposed by the applicant and the time needed for off-site local fire departments to respond to a fire, medical, or hazardous material emergency at the proposed power plant site. If on-site systems do not follow established codes and industry standards, staff recommends additional measures. Staff reviews and evaluates the local fire department capabilities and response time in each area and interviews the local fire officials to determine if they feel adequately trained, manned, and equipped to respond to the needs of a power plant. Staff then determines if the presence of the power plant would cause a significant impact on a local fire department. If it does, staff will recommend that the applicant mitigate this impact by providing increased resources to the fire department.

Staff has also established a procedure when a local fire department has identified either a significant incremental project impact to the local agency or a significant incremental cumulative impact to a local agency. Staff first conducts an initial review of the position and either agrees or disagrees with the fire department's determination that a significant impact would exist if the proposed power plant is built and operated. A process then starts whereby the project applicant can either accept the determination made by staff or refute the determination by providing a Fire Needs Assessment and a Risk Assessment. The Fire Needs Assessment would address fire response and equipment/staffing/location needs while the Risk Assessment would be used to establish that while an impact to the fire department may indeed exist, the risk (chances) of that impact occurring and causing injury or death is less than significant.

LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Worker Safety and Fire Protection Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

<u>Applicable Law</u>	<u>Description</u>
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	This act mandates safety requirements in the workplace with the purpose of “[assuring] so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources” (29 USC § 651).
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	These sections define the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector.
29 CFR sections 1952.170 to 1952.175	These sections provide federal approval of California’s plan for enforcement of its own Safety and Health requirements, in lieu of most of the federal requirements found in 29 CFR sections 1910.1 to 1910.1500.
State	
Title 8 California Code of Regulations (Cal Code Regs.) all applicable sections (Cal/OSHA regulations)	These sections require that all employers follow these regulations as they pertain to the work involved. This includes regulations pertaining to safety matters during construction, commissioning, and operations of power plants, as well as safety around electrical components, fire safety, and hazardous materials use, storage, and handling.
24 Cal Code Regs. section 3, et seq.	This section incorporates the current addition of the Uniform Building Code.
Health and Safety Code section 25500, et seq.	This section presents Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at a facility.
Health and Safety Code sections 25500 to 25541	These sections require a Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at a facility.
Local (or locally enforced)	
Riverside County Ordinance 457	Adopts specific building, mechanical, plumbing, and electrical codes from sources such as the California Building Standards Commission with county-specific modifications.
Riverside County Ordinance 787	Adopts the 2007 edition of the California Fire Code and portions of the 2007 edition of the California Building Code with county-specific modifications.

Riverside County Ordinance 615	Establishes requirements for the use, generation, storage and disposal of hazardous materials within the County.
Riverside County Dept. of Environmental Health, Hazardous Materials Releases	Adopts State requirements and guidelines to govern hazardous materials release response plans and inventories.

C.14.4 PROPOSED PROJECT

C.14.4.1 SETTING AND EXISTING CONDITIONS

The proposed facility would be located in Riverside County approximately 25 miles west of the City of Blythe and 27 miles east of Desert Center, and would consist of two units producing a total output of 250 MW. Fire support services to the site would be under the jurisdiction of the Riverside County Fire Department (RCFD). The closest RCFD fire station would be Blythe Air Base Station #45, located about 15 miles east of the GSEP. The estimated response time from the moment of dispatch is about 23 minutes. The next closest station would be Lake Tamarisk Station #49, located about 35 miles west of the GSEP with a response time of about 35 minutes. RCFD fire stations are staffed full-time with a minimum of three personnel per shift which include paramedics (RCFD 2010).

The applicant has stated that certain plant personnel would be trained as a hazardous materials response team and that one or more spill response kits would be available on-site (GSEP 2009a, Section 5.12.3.2). In the event of a large incident involving hazardous materials, backup support would be provided by the RCFD which has a hazmat response unit capable of handling any incident at the proposed GSEP. The nearest hazmat response team is located in Palm Desert, about 90 miles west of the project site, and would respond within 1.5-2 hours (GSEP 2009a, Section 5.8.1.6 and RCFD 2010).

**Worker Safety and Fire Protection Table 2
Fire and Emergency Response for the GSEP***

RCFD Station	Response Time**	Distance to GSEP	EMS/HazMat Capability***
Blythe Air Base Station #45	~28 minutes	~15 miles	Y/Y
Lake Tamarisk Station #49	~40 minutes	~35 miles	Y/Y

*Source: E-mail communications with the RCFD (RCFD 2010a)

**Response times are estimated from the moment of dispatch.

***All personnel are trained to Emergency Medical Technician (EMT-1) level and first responder for hazardous materials incidents.

In addition to construction and operations worker safety issues, the potential exists for exposure to contaminated soil during site preparation. The Phase I Environmental Site

Assessment conducted for this site in 2009 found no “Recognized Environmental Conditions” per the American Society for Testing and Materials Standards (ASTM) definition. That is, there was no evidence or record of any use, spillage, or disposal of hazardous substances on the site, nor was there any other environmental concern that would require remedial action (GSEP 2009a, Section 5.13.1.3). To address the unlikely possibility that soil contamination would be encountered during construction of the GSEP, proposed Conditions of Certification **Waste-1** and **Waste-2** require a registered professional engineer or geologist to be available during soil excavation and grading to ensure proper handling and disposal of contaminated soil. See the staff assessment section on **WASTE MANAGEMENT** for a more detailed analysis of this topic.

Another potential hazard present at this site is the likelihood of encountering unexploded ordnance (UXOs) left over from large scale military training exercises conducted near the California-Arizona border between 1942 and 1945 and in 1964. The applicant stated that a geophysical survey to identify UXO may be conducted (GSEP 2009a, Section 5.13.1.3). In response the Data Requests 226 and 227, the applicant stated that during the biological and cultural resource surveys conducted over several weeks at the GSEP site, a large number of staff combed the surface of the entire GSEP site and found only one 50 caliber cartridge. Therefore the applicant does not believe additional investigations or a UXO Neutralization/Removal Plan are necessary. The applicant noted that a training program for identifying UXO would be implemented during construction which would be sufficient to ensure proper handling of UXO in the unlikely event of encountering any (GSEP 2009f, Data Response Items 226 and 227).

C.14.4.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Worker Safety

Industrial environments are potentially dangerous during construction and operation of facilities. Workers at the proposed GSEP would be exposed to loud noises, moving equipment, trenches, and confined space entry and egress problems. The workers may experience falls, trips, burns, lacerations, and numerous other injuries. They have the potential to be exposed to falling equipment or structures, chemical spills, hazardous waste, fires, explosions, and electrical sparks and electrocution. It is important for the GSEP to have well-defined policies and procedures, training, and hazard recognition and control at its facility to minimize such hazards and protect workers. If the facility complies with all LORS, workers will be adequately protected from health and safety hazards.

A Safety and Health Program would be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase “Safety and Health Program” to refer to the measures that would be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

Workers at the GSEP would be exposed to hazards typical of construction and operation of a solar thermal electric power generating facility.

Construction Safety Orders are published at Title 8 California Code of Regulations sections 1502, et seq. These requirements are promulgated by Cal/OSHA and would be applicable to the construction phase of the project. The Construction Safety and Health Program would include the following:

- Construction Injury and Illness Prevention Program (8 Cal Code Regs. § 1509)
- Construction Fire Prevention Plan (8 Cal Code Regs. § 1920)
- Personal Protective Equipment Program (8 Cal Code Regs. §§ 1514 — 1522)
- Emergency Action Program and Plan

Additional programs under General Industry Safety Orders (8 Cal Code Regs. §§ 3200 to 6184), Electrical Safety Orders (8 Cal Code Regs. §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 Cal Code Regs. §§ 450 to 544) would include:

- Electrical Safety Program
- Motor Vehicle and Heavy Equipment Safety Program
- Forklift Operation Program
- Excavation/Trenching Program
- Fall Protection Program
- Scaffolding/Ladder Safety Program
- Articulating Boom Platforms Program
- Crane and Material Handling Program
- Housekeeping and Material Handling and Storage Program
- Respiratory Protection Program
- Employee Exposure Monitoring Program
- Hand and Portable Power Tool Safety Program
- Hearing Conservation Program
- Back Injury Prevention Program
- Hazard Communication Program
- Heat and Cold Stress Monitoring and Control Program
- Pressure Vessel and Pipeline Safety Program

The Application for Certification (AFC) includes adequate outlines of each of the above programs (GSEP 2009a, Section 5.14.1.2). Prior to the start of construction of GSEP, detailed programs and plans would be provided to the California Energy Commission Compliance Project Manager (CPM) and to the RCFD pursuant to the Condition of Certification **WORKER SAFETY-1**.

Operations and Maintenance Safety and Health Program

Prior to the start of operations at GSEP, the Operations and Maintenance Safety and Health Program would be prepared. This operational safety program would include the following programs and plans:

- Injury and Illness Prevention Program (8 Cal Code Regs. § 3203)
- Fire Protection and Prevention Program (8 Cal Code Regs. § 3221)
- Personal Protective Equipment Program (8 Cal Code Regs. §§ 3401 to 3411)
- Emergency Action Plan (8 Cal Code Regs. § 3220)

In addition, the requirements under General Industry Safety Orders (8 Cal Code Regs. §§ 3200 to 6184), Electrical Safety Orders (8 Cal Code Regs. §§2299 to 2974) and Unfired Pressure Vessel Safety Orders (8 Cal Code Regs. §§ 450 to 544) would be applicable to the project. Written safety programs for GSEP, which the applicant would develop, would ensure compliance with the above-mentioned requirements.

The AFC includes adequate outlines of the Injury and Illness Prevention Program, Emergency Action Plan, Fire Prevention Program, and Personal Protective Equipment Program (GSEP 2009a, Sections 5.14.1.2 and 5.14.1.3). Prior to operation of GSEP, all detailed programs and plans would be provided to the CPM and RCFD pursuant to Condition of Certification **WORKER SAFETY-2**.

Safety and Health Program Elements

As mentioned above, the applicant provided the proposed outlines for both a Construction Safety and Health Program and an Operations Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. Both safety and health programs would be comprised of six more specific programs and would require major items detailed in the following paragraphs.

Injury and Illness Prevention Program

The IIPP would include the following components as presented in the AFC (GSEP 2009a, Section 5.14.1.2):

- identity of person(s) with authority and responsibility for implementing the program;
- safety and health policy of the plan;
- definition of work rules and safe work practices for construction activities;
- system for ensuring that employees comply with safe and healthy work practices;
- system for facilitating employer-employee communications;
- procedures for identifying and evaluating workplace hazards and developing necessary program(s);
- methods for correcting unhealthy/unsafe conditions in a timely manner;
- safety procedures; and
- training and instruction.

Fire Prevention Plan

California Code of Regulations requires an Operations Fire Prevention Plan (8 Cal Code Regs. § 3221). The AFC outlines a proposed Fire Prevention Plan which is acceptable to staff (GSEP 2009a, Section 5.14.1.3). The plan would accomplish the following:

- determine general program requirements (scope, purpose, and applicability);
- determine potential fire hazards;
- develop good housekeeping practices and proper handling and materials storage;
- determine potential ignition sources and control measures for these sources;
- determine persons responsible for equipment and system maintenance;
- locate portable and fixed fire-fighting equipment in suitable areas;
- establish and determine training and instruction requirements; and
- define recordkeeping requirements.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the RCFD for review and comment to satisfy proposed Conditions of Certification **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Personal Protective Equipment Program

California regulations require Personal Protective Equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (8 Cal Code Regs. §§ 3380 to 3400). The GSEP operational environment would require PPE.

All safety equipment must meet National Institute of Safety and Health (NIOSH) or American National Standards Institute (ANSI) standards and would carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal/OSHA standards. Each employee must be provided with the following information pertaining to the protective clothing and equipment:

- proper use, maintenance, and storage;
- when to use the protective clothing and equipment;
- benefits and limitations; and
- when and how to replace the protective clothing and equipment.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential workplace hazards.

Emergency Action Plan

California regulations require an Emergency Action Plan (8 Cal Code Regs. § 3220). The AFC contains a satisfactory outline for an emergency action plan (GSEP 2009a, Section 5.14.1.3).

The outline lists plans to accomplish the following:

- establish scope, purpose, and applicability;
- identify roles and responsibilities;
- determine emergency incident response training;
- develop emergency response protocols;
- specify evacuation protocols;
- define post emergency response protocols; and
- determine notification and incident reporting.

Written Safety Program

In addition to the specific plans listed above, additional LORS called *safe work practices* apply to the project. Both the Construction and the Operations Safety Programs would address safe work practices under a variety of programs. The components of these programs include, but are not limited to, the programs found under the heading “Construction Safety and Health Program” in this **Worker Safety and Fire Protection** section.

Safety Training Programs

Employees would be trained in the safe work practices described in the above-referenced safety programs.

Additional Safety Issues

This solar power plant will present a unique work environment that includes a solar field located in the high desert. The solar field features thousands of mirrors that heat a heat transfer fluid (HTF) to approximately 750°F. The pipe containing the HTF will reach temperatures at the mirror focal point as high as 1100 °F. Experience at existing solar generating stations shows that these mirrors break, the pipes age, and HTF can leak and catch fire from ball joints or frayed flex hoses. The area under the solar arrays must be kept free from weeds and thus herbicides will be applied as necessary. Exposure to workers via inhalation and ingestion of dusts containing herbicides poses a health risk. Finally, workers will inspect the solar array for HTF leaks and broken mirrors at least once each day by driving up and down dirt paths between the rows of mirrors and even under the mirrors. Cleaning the mirrors will also be conducted on a routine schedule. All these activities will take place year-round and especially during the summer months of peak solar power generation, when outside ambient temperatures routinely reach 115 °F and above.

The applicant has indicated that workers will be adequately trained and protected, but has not included precautions against heat stress and exposure to herbicides. Therefore,

to ensure that workers are indeed protected, staff has proposed additional requirements to proposed Conditions of Certification **WORKER SAFETY-1** and **2**. These requirements consist of the following provisions:

- A worker heat stress protection plan that implements and expands on existing Cal OSHA regulations (8 CCR 3395) requiring heat illness prevention; and
- The development and implementation of Best Management Practices (BMP) for the storage and application of herbicides used to control weeds beneath and around the solar array.

Staff believes that effective implementation of a Heat Stress Protection Plan will mitigate the potential for significant risks to workers from heat during both construction and operations. A BMP requiring proper herbicide storage and application will mitigate potential risks to workers from exposure to herbicides and reduce the chance that herbicides will contaminate either surface water or groundwater. Staff suggests that a BMP follow either the guidelines established by the U.S. EPA (EPA 1993), or more recent guidelines established by the State of California or U.S. EPA.

Additional Mitigation Measures

Protecting construction workers from injury and disease is among the greatest challenges in occupational safety and health. The following facts are reported by the National Institute for Occupational Safety and Health (NIOSH):

- More than 7 million persons work in the construction industry, representing 6 percent of the labor force. Approximately 1.5 million of these workers are self-employed.
- Of approximately 600,000 construction companies, 90 percent employ fewer than 20 workers. Few have formal safety and health programs.
- From 1980 to 1993, an average of 1,079 construction workers were killed on the job each year—more fatal injuries than in any other industry.
- Falls caused 3,859 construction worker fatalities (25.6 percent) between 1980 and 1993.
- Construction injuries account for 15 percent of workers' compensation costs.
- Assuring safety and health in construction is complex, involving short-term work sites, changing hazards, and multiple operations and crews working in close proximity.
- In 1990, Congress directed NIOSH to undertake research and training to reduce diseases and injuries among construction workers in the United States. Under this mandate, NIOSH funds both intramural and extramural research projects.

The hazards associated with the construction industry are thus well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of solar power plants. In order to reduce and/or eliminate these hazards, it has become standard industry practice to hire a Construction Safety Supervisor to ensure a safe and healthful environment for all personnel. That this standard practice has reduced and/or eliminated hazards has been evident in the audits staff recently conducted of power plants under construction. The

federal Occupational Safety and Health Administration (OSHA) has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors in four areas:

- to improve their safety and health performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal/OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal/OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and Cal/OSHA standards, documents, and directives. A Competent Person is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, in order to meet the intent of the OSHA standard to provide for a safe workplace during power plant construction, staff proposes Condition of Certification **WORKER SAFETY-3**, which would require the applicant/project owner to designate and provide for a power plant site Construction Safety Supervisor.

As discussed above, the hazards associated with the construction industry are well documented. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of solar power plants.

Accidents, fires, and a worker death have occurred at Energy Commission-certified power plants in the recent past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by Energy Commission staff in safety audits conducted in 2005 at several power plants under construction. The findings of the audit staff include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;

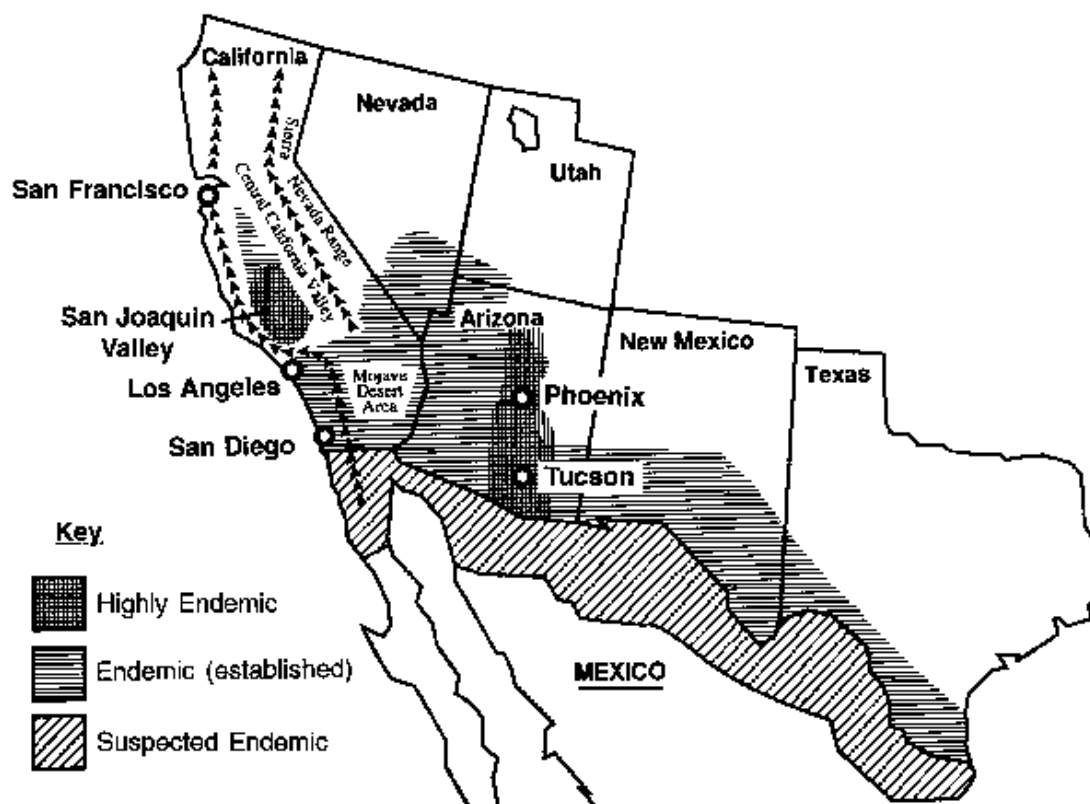
- inappropriate placement of fire extinguishers near hotwork;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- construction of an unsafe aqueous ammonia unloading pad;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility but too close to the perimeter fence; and
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

In order to reduce and/or eliminate these hazards, it is necessary for the Energy Commission to have a professional Safety Monitor on site to track compliance with Cal/OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in Condition of Certification **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the Chief Building Official (CBO) and CPM, will serve as an “extra set of eyes” to ensure that safety procedures and practices are fully implemented at all power plants certified by the Energy Commission. During the audits conducted by staff, most site safety professionals welcomed the audit team and actively engaged it in questions about the team’s findings and recommendations. These safety professionals recognized that safety requires continuous vigilance and that the presence of an independent audit team provided a fresh perspective of the site.

Valley Fever (Coccidioidomycosis)

Coccidioidomycosis or "Valley Fever" (VF) is primarily encountered in southwestern states, particularly in Arizona and California. It is caused by inhaling the spores of the fungus *Coccidioides immitis*, which are released from the soil during soil disturbance (e.g., during construction activities) or wind erosion. The disease usually affects the lungs and can have potentially severe consequences, especially in at-risk individuals such as the elderly, pregnant women, and people with compromised immune systems. Trenching, excavation, and construction workers are often the most exposed population. Treatment usually includes rest and antifungal medications. No effective vaccine currently exists for Valley Fever. VF is endemic to the San Joaquin Valley in California, which presumably gave this disease its common name. In California, the highest VF rates are recorded in Kern, Kings, and Tulare Counties, followed by Fresno and San Luis Obispo Counties. LA County, San Diego County, San Bernardino County, and Riverside County also have reported VF cases although much fewer.

Worker Safety and Fire Protection Figure 1. The geographic distribution of coccidioidomycosis*



*Source: CDC 2006, Figure 2

A 2004 CDC report found that the number of reported cases of coccidioidomycosis in the US increased by 32% during 2003-2004, with the majority of these cases occurring in California and Arizona. The report attributed these increases to changes in land use, demographics, and climate in endemic areas, although certain cases might be attributable to increased physician awareness and testing (CDC 2006). According to the CDC Morbidity and Mortality Weekly Report of February 2009, incidences of valley fever have increased steadily in Arizona and California in the past decade. Cases of coccidioidomycosis averaged about 2.5 per 100,000 population annually from 1995 to 2000 and increased to 8.0 per 100,000 population between 2000 and 2006 (incident rates tripled). In 2007 there was a slight drop in cases, but the rate was still the highest it has been since 1995. The report identified Kern County as having the highest incidence rates (150.0 cases per 100,000 population), and non-Hispanic blacks having the highest hospitalization rates (7.5 per 100,000 population). In addition, between the years 2000 and 2006, the number of valley fever related hospitalizations climbed from 1.8 to 4.3 per 100,000 population (611 cases in 2000 to 1,587 cases in 2006) and then decreased to 1,368 cases in 2007 (3.6 per 100,000 population). Overall in California, during 2000-2007, a total of 752 (8.7%) of the 8,657 persons hospitalized for coccidioidomycosis died (CDC 2009).

A 2007 study published in the Emerging Infectious Diseases journal of the Center for Disease Control and Prevention (CDC), found the frequency of hospitalization for coccidioidomycosis in the entire state of California to be 3.7 per 100,000 residents per year for the period between 1997 and 2002 (see Table 1 below). There were 417 deaths from VF in California in those years, resulting in a mortality rate of 2.1 per 1 million California residents annually.

Worker Safety and Fire Protection Table 3: Hospitalizations for coccidioidomycosis, California, 1997–2002*

Category	Total hospitalizations	Total person- yrs ($\times 10^6$)	Frequency of hospitalization**	Frequency of hospitalization for coccidioidal meningitis**
Total				
Total	7,457	203.0	3.67	0.657
Year				
1997	1,269	32.5	3.90	0.706
1998	1,144	32.9	3.50	0.706
1999	1,167	33.4	3.5	0.61
2000	1,100	34.0	3.23	0.62
2001	1,291	34.7	3.7	0.58
2002	1,486	35.3	4.2	0.71
Highest incidence counties				
Kern	1,700	3.97	42.8	
Tulare	479	2.21	21.7	
Kings	133	0.77	17.4	
SLO	170	1.48	11.5	

*Source: Flaherman 2007

**Per 100,000 residents per year

Riverside County has approximately 50 cases of VF per year (population is roughly 2 million) while nearby San Diego County has about 120 cases per year (population roughly 3 million). In comparison, an average of over 1,000 cases have been reported annually in Kern County during the last five years. Cases of VF in Riverside County have remained steady in the past several years, fluctuating only slightly between 48 and

55 cases per year. Nine deaths related to VF have been reported in Riverside County between 2005 and 2008 (Williams 2009). A rate of 50 cases per year per 2,000,000 persons corresponds to a risk of about 25 in one million and a rate of 2.5 cases per 100,000 persons, which is lower than the average rate for the entire state of California (~3.6 cases per 100,000 residents). Data received from the Riverside County Department of Public Health indicates that the crude VF rate in Riverside County between 1999 and 2006 has been even lower, about 15 per 100,000 residents. The region in which the GSEP project would be located (between Blythe and Dessert Center) has recorded 5 or fewer cases between 1999 and 2006 (RCDPH 2007).

Worker Safety and Fire Protection Table 4: Valley Fever rates in Riverside County

County of Riverside			
Reported Cases: Coccidioidomycosis (Valley Fever)			
Years 1999 - 2006			
By Zip Code of Residence*			
ZIP	PO_NAME	8 Year Total	8 Year Estimated Crude Aggregate Rate (per 10,000)
92236	Coachella	5	1.7
92225	Blythe	5	2.8
92883	Corona	5	2.6
92591	Temecula	5	1.5
92201	Indio	6	1.0
92505	Riverside	6	1.4
92544	Hemet	7	1.6
92530	Lake Elsinore	7	1.4
92506	Riverside	7	1.5
92879	Corona	8	1.6
92507	Riverside	10	1.9
92583	San Jacinto	10	4.0
92570	Perris	11	2.5
92220	Banning	12	3.8
92586	Sun City	12	6.2
92509	Riverside	13	1.8
92504	Riverside	21	4.0
92503	Riverside	32	4.1
TOTAL	ALL COUNTY	280	1.5
* only zip codes for which more than 4 cases were recorded during the 8-year period are included			
Source: DHS: AVSS CMR reporting			
Compiled:			
Riverside County Department of Public Health			
Epidemiology and Program Evaluation			
Kevin Meconis, Epidemiologist			
11/19/2007			

A 1996 paper that tried to explain the sudden increase in Coccidioidomycosis cases that began in the early 90s found that the San Joaquin Valley in California has the largest population of *C. immitis*, which is found to be distributed unevenly in the soil and seems

to be concentrated around animal burrows and ancient Indian burial sites. It is usually found 4 to 12 inches below the surface of the soil. The paper also reported that incidences of coccidioidomycosis vary with the seasons; with highest rates in late summer and early fall when the soil is dry and the crops are harvested. Dust storms are frequently followed by outbreaks of coccidioidomycosis (Kirkland 1996). A modeling attempt to establish the relationship between fluctuations in VF incident rates and weather conditions in Kern County found that there is only a weak connection between weather and VF cases (weather patterns correlate with up to 4% of outbreaks). The study concluded that the factors that cause fluctuations in VF cases are not weather-related but rather biological and anthropogenic (i.e. human activities, primarily construction on previously undisturbed soil) (Talamantes 2007).

During correspondence with Dr. Michael MacLean of the Kings County Health Department, he noted that according to his experience and of those who study VF, it is very hard to find the fungus in soil that was previously farmed and irrigated, which greatly reduces the risk of infection resulting from disturbance of farmed lands. This does not apply to previously undisturbed lands where excavation, grading, and construction may correlate with increases in VF cases. Dr. MacLean feels that with the current state of knowledge, we can only speculate on the causes and trends influencing VF cases and he does not feel that construction activities are necessarily the cause of VF outbreaks (KCEHS 2009).

Valley Fever is spread through the air. If soil containing the fungus is disturbed by construction, natural disasters, or wind, the fungal spores get into the air where people can breathe in the spores. The disease is not spread from person to person. Occupational or recreational exposure to dust is an important consideration. Agricultural workers, construction workers, or others (such as archeologists) who dig in the soil in the disease-endemic area of the Central Valley are at the highest risk for the disease (CDC 2006; CDHS 2010). The risk for disseminated coccidioidomycosis is much higher among some ethnic groups, particularly African-Americans and Filipinos. In these ethnic groups, the risk for disseminated coccidioidomycosis is tenfold that of the general population (CDC 2006).

Worker Safety and Fire Protection Table 5: Disease Forms of Valley Fever

CATEGORIES	NOTES
Asymptomatic	<ul style="list-style-type: none">• Occurs in about 50% of patients
Acute Symptomatic	<ul style="list-style-type: none">• Pulmonary syndrome that combines cough, chest pain, shortness of breath, fever, and fatigue.• Diffuse pneumonia affects immunosuppressed individuals• Skin manifestations include fine papular rash, erythema nodosum, and erythema multiforme• Occasional migratory arthralgias and fever
Chronic Pulmonary	<ul style="list-style-type: none">• Affects between 5 to 10% of infected individuals• Usually presents as pulmonary nodules or peripheral thin-walled cavities
Extrapulmonary/Disseminated Varieties	
Chronic skin disease	<ul style="list-style-type: none">• Keratotic and verrucose ulcers or subcutaneous fluctuant abscesses
Joints / Bones	<ul style="list-style-type: none">• Severe synovitis and effusion that may affect knees, wrists, feet, ankles, and/or pelvis• Lytic lesions commonly affecting the axial skeleton
Meningeal Disease	<ul style="list-style-type: none">• The most feared complication• Presenting with classic meningeal symptoms and signs• Hydrocephalus is a frequent complication
Others	<ul style="list-style-type: none">• May affect virtually any organ, including thyroid, GI tract, adrenal glands, genitourinary tract, pericardium, peritoneum

Given the available scientific and medical literature on Valley Fever, it is difficult for staff to assess the potential for VF to impact workers during construction and operation of the

proposed GSEP with a reasonable degree of certainty. To minimize potential exposure of workers and also the public to coccidioidomycosis during soil excavation and grading, extensive wetting of the soil prior to and during construction activities should be employed and dust masks should be worn at certain times during these activities. The dust (PM10) control measures found in the Air Quality section of this SA/DPA/DEIS should be strictly adhered to in order to adequately reduce the risk of workers contracting VF. To provide additional protection to workers that could experience elevated exposure during construction activities, staff proposes Condition of Certification **WORKER SAFETY-9** which would require that the dust control measures found in proposed Conditions **AQ-SC3** and **AQ-SC4** be supplemented with additional requirements.

Fire Hazards

During construction and operation of the proposed GSEP project, there is the potential for both small fires and major structural fires. Electrical sparks, combustion of fuel oil, hydraulic fluid, mineral oil, insulating fluid at the power plant switchyard or flammable liquids, explosions, and over-heated equipment, may cause small fires. Major structural fires in areas without automatic fire detection and suppression systems are unlikely to develop at power plants. Fires of heat transfer fluid such as that proposed for use in the solar panels at GSEP are rare. Compliance with all LORS would be adequate to assure protection from all fire hazards.

Staff reviewed the information provided in the AFC and spoke to representatives of the RCFD to determine if available fire protection services and equipment would adequately protect workers and to determine the project's impact on fire protection services in the area. The project will rely on both on-site fire protection systems and local fire protection services. The on-site fire protection system provides the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the RCFD (RCFD 2010).

Construction

During construction, the permanent fire protection systems proposed for the GSEP would be installed as soon as practical; until then portable fire extinguishers would be placed throughout the site at appropriate intervals and periodically maintained. Safety procedures and training would be implemented according to the guidelines of the Construction Fire Protection and Prevention Plan (GSEP 2009a, Section 5.14.1.2).

Operation

The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the 2007 California Fire Code, all applicable recommended NFPA standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements, with the exception of providing a secondary access point for emergency response vehicles. Both the California Fire Code (24 CCR Part 9, chapter 5, section 503.1.2) and the Uniform Fire Code (sections 901 and 902) require that access to the site be reviewed and approved by the fire department. All power plants licensed by the Energy Commission have more than one access point to the power plant site. This is sound fire safety procedure and allows for fire department vehicles and personnel to access the site should the main gate

be blocked. The proposed GSEP has only one access point, that being through the main gate located near the southeast corner of Unit 2 (via a new public road from I-10), and the AFC makes no mention of a secondary access point through the perimeter fence (GSEP 2009a, Section 3.5.5 and Figure 3.4-1). Staff finds that a second access point is necessary to ensure fire department access. This access point can be restricted to emergency use only and, if possible, should be equipped with the fire department's Opticom System for remote keyless entry. Therefore, in order to comply with the requirements of LORS, staff proposes a Condition of Certification **WORKER SAFETY-6** that would require the project owner to identify and provide a second access point to the site for emergency vehicles and equip this secondary gate with either the Opticom System or a keypad for fire department personnel to open the gate.

Fire suppression elements in the proposed plant would include both fixed and portable fire extinguishing systems. The fire water would be supplied from on-site wells and stored in two water storage tanks (one per unit) with a dedicated fire protection supply of 360,000 gallons in each. One electric and one diesel-fueled backup firewater pump would supply water to each unit's fire protection loop and two electric jockey pumps would maintain pressure in the systems (GSEP 2009a, Section 5.14.1.3).

Fire hydrants would be installed throughout the site per NFPA requirements and a sprinkler deluge system would be installed in areas of risk including each unit's transformer, HTF expansion tank, and HTF circulating pump area. A sprinkler system would be installed at the STG and in administrative buildings. In addition to the fixed fire protection system, appropriate class of service portable extinguishers and fire hydrants/hose stations would be located throughout the facility at code-approved intervals. The solar fields would be protected by isolation valves that would allow only a finite amount of HTF to burn before extinguishing (GSEP 2009a, Section 5.14.1.3).

According to NFPA standards and UFC requirements, the fire protection system must have fire detection sensors and monitoring equipment that would trigger alarms and automatically actuate the suppression systems. Staff has determined that these systems will ensure adequate fire protection.

The applicant would be required by Conditions of Certification **WORKER SAFETY-1** and **-2** to provide the final Fire Protection and Prevention Program to staff and to the RCFD prior to construction and operation of the project to confirm the adequacy of the proposed fire protection measures.

In two letters from the RCFD (RCFD 2010a and 2010b), Captain Neuman of the RCFD has stated that the GSEP would have an impact on Riverside County Fire Department's ability to respond to fire, HazMat, and EMS emergencies at the GSEP. He also stated that the three solar projects proposed for the I-10 corridor (Blythe, Genesis, and Palen) would also have a cumulative adverse impact on the RCFD's ability to provide an acceptable level of service. The RCFD based its analysis on their categories of industrial facilities, the type and level of service needed for projects in each category, the appropriate response times needed for each category, and the level of response required for the GSEP. The RCFD determined that, due to the remote location of the GSEP and the other two solar power plants and the expansive nature of solar arrays at the GSEP, the response time from the RCFD's existing facilities would be inadequate

and that a new fire station more closely located to these solar power plants and adequately equipped and staffed would be necessary.

Staff has considered the position of the RCFD and all relevant information as well as past experience at existing solar power plants that are similar to the proposed project. The proposed facility would be located in an area that is currently served by the Riverside County Fire Department (RCFD). The fire, HazMat, and EMS needs at the proposed plant are real and would pose significant added demands on local fire protection services. In addition, staff finds that the RCFD's Hazmat Response Team is not adequately equipped and staffed to respond to hazardous materials incidents at the proposed facility with an adequate response time. Staff concurs with the assessment of the RCFD and has determined that the GSEP would cause a significant individual and cumulative impact on the local fire department.

Regarding potential mitigation, Captain Neuman implied that, in general, the impacts could be mitigated at least in part to a level of insignificance if the developers of all three proposed solar projects participate in the "Development Impact Fee Programs" adopted by the Riverside County Board of Supervisors. In two personal communications via telephone (February 10, 2010), staff discussed these impacts and the potential for mitigation with Captain Neuman and Mr. Ross of the Riverside County Planning Department. It appears uncertain whether the solar power plants located on Federal BLM land would be required to participate in the County's fee program. Therefore, staff is proposing that the GSEP be required to fund fire department capital improvements in the amount of \$350,000 and to make an annual payment of \$100,000 to mitigate both its individual impact on the fire department and its share of a cumulative impact on the fire department. Staff is proposing that the other two solar projects make the same payments.

Emergency Medical Services Response

Staff conducted a statewide survey to determine the frequency of Emergency Medical Services (EMS) response and off-site fire-fighter response for natural gas-fired power plants in California. The purpose of the analysis was to determine what impact, if any, power plants may have on local emergency services. Staff has concluded that incidents at power plants that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for rare instances where a rural fire department has mostly volunteer fire-fighting staff. However, staff has determined that the potential for both work-related and non-work-related heart attacks exists at power plants. In fact, staff's research on the frequency of EMS response to gas-fired power plants shows that many of the responses for cardiac emergencies involved non-work-related incidences, including those involving visitors.

The need for prompt response within a few minutes is well documented in the medical literature. Staff believes that the quickest medical intervention can only be achieved with the use of an on-site automatic external defibrillator (AED); the response from an off-site provider would take longer regardless of the provider location. This fact is also well documented and serves as the basis for many private and public locations (e.g., airports, factories, government buildings) maintaining on-site cardiac defibrillation devices. Therefore, staff concludes that, with the advent of modern cost-effective

cardiac defibrillation devices, it is proper in a power plant environment to maintain such a device on site in order to treat cardiac arrhythmias resulting from industrial accidents or other non-work related causes.

Staff proposes Condition of Certification **WORKER SAFETY-5**, which would require that a portable AED be located on site, that all power plant employees on site during operations be trained in its use, and that a representative number of workers on site during construction and commissioning also be trained in its use.

Closure and Decommissioning Impacts and Mitigation

Closure of the proposed GSEP (temporary or permanent) would follow a facility closure plan prepared by the applicant and designed to minimize public health and environmental impacts. Staff expects that impacts from the closure and decommissioning process would represent a fraction of the impacts associated with the construction or operation of the proposed GSEP. Therefore based on staff's analysis for the construction and operation phases of this project, staff concludes that hazardous materials-related impacts from closure and decommissioning of the GSEP would be insignificant.

C.14.4.3 CEQA LEVEL OF SIGNIFICANCE

Staff's analysis of Worker Safety and Fire Protection impacts from the proposed GSEP has determined that impacts would be below the level of significance if the proposed mitigation is implemented.

C.14.5 REDUCED ACREAGE ALTERNATIVE

The Reduced Acreage Alternative would essentially be Unit 1 of the proposed project, including a 125 MW solar facility located within the boundaries of the proposed project as defined by NextEra. This alternative is analyzed for two major reasons: (1) it eliminates about 50 percent of the proposed project area so impacts are reduced, and (2) by eliminating the eastern solar field, which is located on flowing desert washes, it would reduce impacts to the sand dune and playa areas and to the Mojave Fringe-toed Lizard habitat. The alternative would also reduce impacts to wildlife movement by reducing obstruction of the Palen wash and would maintain, thru both fluvial and Aeolian processes, the dune and sandy habitats. The boundaries of the Reduced Acreage Alternative are shown in **Alternatives Figure 1**.

C.14.5.1 SETTING AND EXISTING CONDITIONS

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates effects to the eastern 125 MW solar field and relocates the gas yard approximately 1.75 miles northwest of its present location. As a result, the environmental setting consists of the western portion of the proposed project, as well as the area affected by the linear project components.

C.14.5.2 ASSESSMENT OF IMPACTS AND DISCUSSION OF MITIGATION

Construction of the Reduced Acreage Alternative is likely to require fewer employees which would reduce the impacts to worker safety. Similarly, this alternative may have reduced impacts in the area of fire protection due to the smaller amounts of flammable/hazardous materials and potential ignition sources that would exist with this alternative. However, the reduced impacts in the area of Worker Safety and Fire Protection would be minor, and staff has determined that the project as proposed would have less than significant impacts in the area of Worker Safety and Fire Protection if the proposed mitigation is implemented. Therefore the Reduced Acreage Alternative is not preferable over the project as proposed.

C.14.5.3 CEQA LEVEL OF SIGNIFICANCE

Staff has determined that impacts in the area of Worker Safety and Fire Protection associated with either the GSEP as proposed or the Reduced Acreage Alternative would be below the CEQA level of significance. The same conditions of certification would be required for the Reduced Acreage Alternative and the project as proposed.

C.14.6 DRY COOLING ALTERNATIVE

This section identifies the potential impacts of using air-cooled condenser (ACC) systems rather than the cooling towers proposed by NextEra for the Genesis project. It is assumed that the ACC systems would be located where the cooling towers are currently proposed for each of the two 125 MW power block, as illustrated in **Alternatives Figure 2** (see Section B.3).

Approximately 18 ACC fans would be required for each of the two solar fields. The 18 fans, or ACC's, would operate when the ambient temperature is above 50 degrees Fahrenheit. When the temperature is below 50 degrees Fahrenheit, only 10 of the fans would be used (GSEP 2009f). The 18 ACC fans described in the GSEP cooling study would have a length of approximately 279 feet, a width of approximately 127 feet, and a height of 98 feet (GSEP 2009f). However, based on the ACC preliminary designs for nearby solar thermal projects in similar ambient temperatures, an additional 11,690 square feet could be required for siting of the fans and the fans would be up to 120 feet in height. In addition to the ACC fans, NextEra would use a small Wet Surface Air Cooler when needed to provide auxiliary cooling during extremely hot days (GSEP 2009f). This alternative is analyzed because it would reduce the amount of water required for steam turbine cooling from 822 acre-feet per year (AFY) to 66 AFY. This reduction in water use would reduce impacts to water and biological resources but not have any impact on worker safety and fire protection.

C.14.6.1 Setting and Existing Conditions

This alternative is located entirely within the boundaries of the proposed project. It simply eliminates the use of wet-cooling towers and incorporated the use of air-cooled condensers (ACC) in the same location. As a result, the environmental setting would be the same as for the proposed project.

C.14.6.2 Assessment of Impacts and Discussion of Mitigation

The risk to workers and the impacts on fire protection would not change significantly with any of the cooling technologies. This is mostly due to the generic nature of worker and fire protection required at a power plant licensed by the Energy Commission.

C.14.6.3 CEQA Level of Significance

The overall impacts of the project with dry cooling would be the same as those of the proposed project; both would have less than significant impacts in the area of worker safety and fire protection.

C.14.7 NO PROJECT/NO ACTION ALTERNATIVE

There are three (3) No Project/No Action Alternatives evaluated in this section, as follows:

C.14.7.1 NO ACTION ON PROPOSED PROJECT APPLICATION AND ON CDCA LAND USE PLAN AMENDMENT

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would not amend the CDCA Plan. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because there would be no amendment to the CDCA Plan and no solar project approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no new structures or facilities constructed or operated on the site. As a result, no construction safety and health and project operations and maintenance safety and health programs would be required and no impacts on local fire protection services would be created. However, the land on which the project is proposed would become available to other uses that are consistent with BLM's land use plan, including another solar project requiring a land use plan amendment. In addition, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.14.7.2 NO ACTION ON PROPOSED PROJECT APPLICATION AND AMEND THE CDCA LAND USE PLAN TO MAKE THE AREA AVAILABLE FOR FUTURE SOLAR DEVELOPMENT

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and BLM would amend the CDCA Land Use Plan of 1980, as amended, to allow for other solar projects on the site. As a result, it is possible that another solar energy project could be constructed on the project site.

Because the CDCA Plan would be amended, it is possible that the site will be developed with another solar technology. Construction and operation requirements for solar technologies vary. However, it is expected that construction safety and health and project operations and maintenance safety and health programs would be required for

all solar technologies and impacts to local fire protection services would be potentially generated. As such, it is expected that the impacts to worker safety and fire protection from a different solar technology would likely be similar to impacts from the proposed project.

C.14.7.3 NO ACTION ON PROPOSED PROJECT APPLICATION AND AMEND THE CDCA LAND USE PLAN TO MAKE THE AREA UNAVAILABLE FOR FUTURE SOLAR DEVELOPMENT

Under this alternative, the proposed Genesis Solar Energy Project would not be approved by the CEC and BLM and the BLM would amend the CDCA Plan to make the proposed site unavailable for future solar development. As a result, no solar energy project would be constructed on the project site and BLM would continue to manage the site consistent with the existing land use designation in the CDCA Land Use Plan of 1980, as amended.

Because the CDCA Plan would be amended so no solar projects can be approved for the site under this alternative, it is expected that the site would continue to remain in its existing condition, with no construction or operation of a solar facility. No construction safety and health and no maintenance safety and health programs would be required and no demands on local fire protection services would be made. Therefore, this No Project/No Action Alternative would not result in impacts to worker safety and fire protection. However, in the absence of this project, other renewable energy projects may be constructed to meet State and Federal mandates, and those projects would have similar impacts in other locations.

C.14.8 CUMULATIVE IMPACTS

Section B.3, Cumulative Scenario, provides detailed information on the potential cumulative solar and other development projects in the project area. Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis for the proposed project. In summary, these projects are:

- Renewable energy projects on BLM, State, and private lands, as shown on **Cumulative Figure 1** and in **Cumulative Tables 1A and 1B**. Although not all of those projects are expected to complete the environmental review processes, or be funded and constructed, the list is indicative of the large number of renewable projects currently proposed in California.
- Foreseeable future projects in the immediate area as shown on **Cumulative Impacts Figure 2, I-10 Corridor Existing and Future/Foreseeable Projects, and Cumulative Tables 2 and 3**. Table 2 presents existing projects in this area and Table 3 presents future foreseeable projects in the I-10 Corridor Area. Both tables indicate project name and project type, its location and its status.

These projects are defined within a geographic area that has been identified by the CEC and BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts for all resource elements or environmental parameters. Most of these projects have, are, or will be required to undergo their own independent environmental review under CEQA and/or NEPA. Even if the cumulative projects

described in Section B.3 have not yet completed the required environmental processes, they were considered in the cumulative impacts analyses in this SA/DPA/DEIS.

C.14.8.1 GEOGRAPHIC SCOPE OF ANALYSIS

The geographic areas considered for cumulative impacts on Worker Safety/Fire Protection are within the project boundaries and regional impacts.

C.14.8.2 EFFECTS OF PAST AND PRESENT PROJECTS

For this analysis, there are three projects or developments in the area or region that would require the response from off-site fire departments for fire, HazMat, or EMS emergencies that staff has found to have an impact on the region. The need for fire department response to solar power plants may not be frequent but past experience has shown that there is a significant chance that it will occur. Two power plants in the area - the Blythe Power plants I and II - are not considered by staff to have had an impact on the area.

Staff has analyzed the potential for **Worker Safety/Fire Protection** cumulative impacts at many other power plant projects in California. A significant cumulative Worker Safety/Fire Protection impact is defined as the simultaneous need for a fire department to respond to multiple locations such that its resources and those of the mutual aid fire departments (which routinely respond in every-day situations to emergencies at residences, commercial buildings, and heavy industry) are over-whelmed and cannot effectively respond. Existing locations that might require a fire department response along with those facilities which might likely be built were considered. Staff believes that cumulative impacts are both possible and probable because despite the many safeguards implemented to prevent and control fires, HazMat releases, and injuries/accidents, the locations of the existing facilities are distant from the GSEP site and the RCFD fire stations such that the response times and equipment are not adequate. Staff therefore believes the cumulative impacts from existing facilities on the local fire department would be significant should the GSEP be built and operated.

C.14.8.3 EFFECTS OF REASONABLY FORESEEABLE FUTURE PROJECTS

Worker Safety/Fire Protection at the proposed project is also expected to be affected by reasonably foreseeable future projects, including the proposed Blythe and Palen solar projects proposed for the I-10 corridor.

Contribution of the Genesis Solar Energy Project to Cumulative Impacts

Construction. The construction of the GSEP is expected to result in short term adverse impacts related to Worker Safety/Fire Protection during construction activities. It is expected that some of the cumulative projects described above which are not yet built may be under construction the same time as the GSEP and therefore short term impacts related to Worker Safety/Fire Protection during construction of those cumulative projects may occur.

Operation. The operation of the GSEP is expected to result in long term adverse impacts during operation of the project related to Worker Safety/Fire Protection. Staff has analyzed the

potential for Worker Safety/Fire Protection cumulative impacts at many other power plant projects in California. A significant cumulative Worker Safety/Fire Protection impact is defined as the simultaneous need for a fire department to respond to multiple locations such that its resources and those of the mutual aid fire departments (which routinely respond in every-day situations to emergencies at residences, commercial buildings, and heavy industry) are overwhelmed and cannot effectively respond. Existing locations that might require a fire department response along with those facilities which might likely be built were considered. Staff believes that cumulative impacts are possible and although they are not highly probable because of the many safeguards implemented to both prevent and control fires, HazMat releases, and injuries/accidents, due to their distant locations and wide expansive sites, cumulatively they present a significant impact. Additionally, even though the chances of two or more solar power plants requiring emergency response simultaneously may be low, once again a response to one distant site would preclude a simultaneous response to another solar plant or even a residential or commercial location in a timely and adequate manner due to the great distances involved. Staff therefore believes the impacts on the local fire department would be cumulatively significant.

The applicant will develop and implement a fire prevention program for the GSEP independent of any other projects considered for potential cumulative impacts and will be required to fund capital improvements and staffing for the RCFD. Staff believes that the facility, as proposed by the applicant and with the additional mitigation measures proposed by staff, will then have an insignificant impact on fire, HazMat, or EMS response. Therefore, staff concludes that with mitigation, the GSEP's contribution to a Worker Safety/Fire Protection cumulative impact would be less than significant.

Decommissioning. The decommissioning of the GSEP is not expected to result in adverse impacts related to Worker Safety/Fire Protection. It is unlikely that the construction or decommissioning of any of the cumulative projects would occur concurrently with the decommissioning of this project, because the decommissioning is not expected to occur for approximately 40 years. As a result, it is not expected that significant impacts related to Worker Safety/Fire Protection during decommissioning of the GSEP generated by the cumulative projects will occur.

C.14.9 COMPLIANCE WITH LORS

Staff concludes that construction and operation of the GSEP project would be in compliance with all applicable laws, ordinances, regulations, and standards (LORS) regarding long-term and short-term project impacts in the area of worker safety and fire protection.

C.14.10 NOTEWORTHY PUBLIC BENEFITS

Staff is unable to describe any noteworthy public benefit in the area of Worker Safety/Fire Protection.

C.14.11 PROPOSED CONDITIONS OF CERTIFICATION/MITIGATION MEASURES

WORKER SAFETY-1 The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Injury and Illness Prevention Program;
- a Construction heat stress protection plan that implements and expands on existing Cal OSHA regulations as found in 8 CCR 3395;
- a Construction Emergency Action Plan; and
- a Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, the Heat Stress Protection Plan, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the Riverside County Fire Department for review and comment prior to submittal to the CPM for approval.

Verification: At least 30 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Riverside County Fire Department stating the fire department's comments on the Construction Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following:

- an Operation Injury and Illness Prevention Plan;
- an Operation heat stress protection plan that implements and expands on existing Cal OSHA regulations (8 CCR 3395);
- a Best Management Practices (BMP) for the storage and application of herbicides;
- an Emergency Action Plan;
- Hazardous Materials Management Program;
- Fire Prevention Plan (8 Cal Code Regs. § 3221); and
- Personal Protective Equipment Program (8 Cal Code Regs, §§ 3401—3411).

The Operation Injury and Illness Prevention Plan, Emergency Action Plan, Heat Stress Protection Plan, BMP for Herbicides, and Personal Protective Equipment Program shall be submitted to the CPM for review and comment concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan and the Emergency Action Plan shall also be submitted to the Riverside County Fire Department for review and comment.

Verification: At least 30 days prior to the start of first-fire or commissioning, the project owner shall submit to the CPM for approval a copy of the Project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy of a letter to the CPM from the Riverside County Fire Department stating the fire department's comments on the Operations Fire Prevention Plan and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;
- assure that all construction and commissioning workers and supervisors receive adequate safety training;
- complete accident and safety-related incident investigations and emergency response reports for injuries and inform the CPM of safety-related incidents; and
- assure that all the plans identified in Conditions of Certification Worker Safety-1 and -2 are implemented.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the Construction Safety Supervisor (CSS). The contact information of any replacement CSS shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report a monthly safety inspection report to include:

- record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health; and

- report of accidents and injuries that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the Chief Building Official (CBO) for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the CBO. Those services shall be in addition to other work performed by the CBO. The Safety Monitor shall be selected by and report directly to the CBO and will be responsible for verifying that the Construction Safety Supervisor, as required in Condition of Certification Worker Safety-3, and for implementing all appropriate Cal/OSHA and Energy Commission safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable automatic external defibrillator (AED) is located on site during construction and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functioning at all times. During construction and commissioning, the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the Construction Safety Supervisor or delegate, and all shift foremen. During operations, all power plant employees shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 60 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable automatic external defibrillator (AED) exists on site and a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall identify and provide a second access point for emergency personnel to enter the site. This access point and the method of gate operation shall be submitted to the Riverside County Fire Department for review and comment and to the CPM for review and approval.

Verification: At least sixty (60) days prior to the start of site mobilization, the project owner shall submit to the Riverside County Fire Department and the CPM preliminary plans showing the location of a second access point to the site and a description of how the gate will be opened by the fire department. At least thirty (30) days prior to the start of site mobilization, the project owner shall submit final plans to the CPM review and approval. The final plan submittal shall also include a letter containing comments from the Riverside County Fire Department or a statement that no comments were received.

WORKER SAFETY-7 The project owner shall either (1) reach an agreement with the Riverside County Fire Department regarding funding of its project-related share of capital costs to build fire protection/response infrastructure and provide appropriate equipment as mitigation of project-related impacts on fire

protection services, **or**, if no agreement can be reached shall (2) fund its share of the capital costs in the amount of \$350,000.

Verification: At least sixty (60) days prior to the start of site mobilization, the project owner shall provide the CEC CPM with a copy of the agreement with the RCFD or documentation that the amount of \$350,000 has been paid to the RCFD.

WORKER SAFETY-8 The project owner shall provide an annual payment of \$100,000 to the RCFD for the support of three fire department staff commencing with the date of site mobilization and continuing annually thereafter on the anniversary until the final date of power plant decommissioning.

Verification: At least 30 days prior to the start of site mobilization the project owner shall provide documentation of the payment described above to the CEC CPM.

WORKER SAFETY-9 The project owner shall develop and implement an enhanced Dust Control Plan that includes the requirements described in **AQ-SC3** and additionally requires:

- i. site worker use of dust masks (NIOSH N-95 or better) whenever visible dust is present;
- ii. site monitoring for the presence of *Coccidioides immitis* in soil before site mobilization and monthly thereafter; and
- iii. implementation of enhanced dust control methods (increased frequency of watering, use of dust suppression chemicals, etc. consistent with **AQ-SC4**) immediately whenever visible dust comes from or onto the site.

After three consecutive months of not finding significant soil levels of *Coccidioides immitis*, the project owner may ask the CPM to re-evaluate and revise this testing requirement.

Verification: At least 60 days prior to the commencement of site mobilization, the enhanced Dust control Plan shall be provided to the CPM for review and approval.

C.14.12 CONCLUSIONS

Staff concludes that if the applicant for the proposed GSEP project provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by Conditions of Certification **WORKER SAFETY-1**, and **-2** and fulfills the requirements of Condition of Certification **WORKER SAFETY-3** through **-9**, the project would incorporate sufficient measures to ensure adequate levels of industrial safety and comply with applicable LORS. Staff also concludes that the operation of this power plant, with mitigation, would not significantly impact the local fire department.

C.14.13 REFERENCES

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